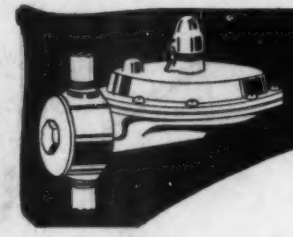
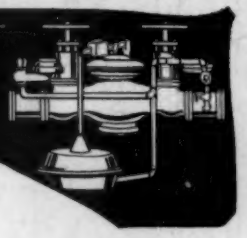
Vol. 131, No. 1 July, 1929 Price 25 cents

AMERICAN GAS JOURNAL

Established 1859 Pioneer of the Gas Industry
Including GAS INDUSTRY Est. 1900



Gas Control Since 1892



LEADERSHIP in gas regulation and gas control is attained only by the merit of the product. REYNOLDS has gained supremacy through thirty-seven years of pioneer work—years well spent in acquiring specialized knowledge, trained skill and perfected facilities.

REYNOLDS not only build a complete line of Gas Regulators that answer every requirement, but maintain an Engineering Service to help you solve any of your Gas Control problems.

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Gas Regulator Company
Anderson, Indiana

Representatives: EASTERN SERVICE COMPANY, Boston, Mass., F. E. NEWBERRY, Avon, N. J.
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Becker Type Ovens
for
Providence

THE Providence Gas Company of Providence, Rhode Island, has contracted with the Koppers Construction Company for the design and erection of one battery of by-product coke ovens consisting of twenty-five of the Koppers Construction Company's Becker Type Combination Coke and Gas Ovens.

The ovens have a capacity when in normal operation of 515 net tons of coal per day and when under-fired with producer gas their oven gas output will be approximately 5,500,000 cubic feet per day.

The Koppers Construction Company

Koppers Building **Pittsburgh, Penna.**

AMERICAN
GAS JOURNAL
Established 1859 — *Pioneer of the Gas Industry*
Including · GAS INDUSTRY · Est. 1900 ·

Executive and Editorial Offices, 53 Park Place, New York City

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Vol. 131, No. 1 — July, 1929 — Whole Number 3667

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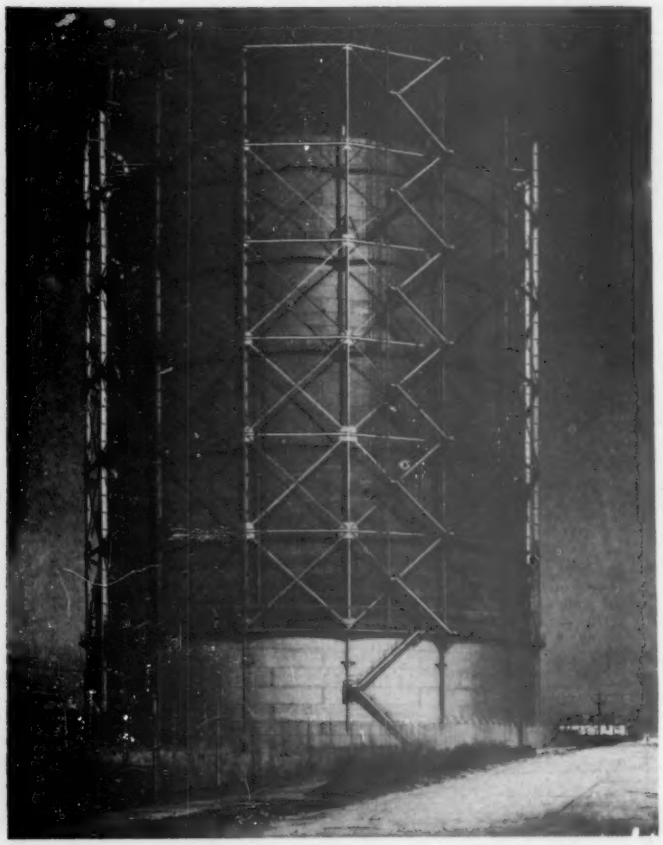
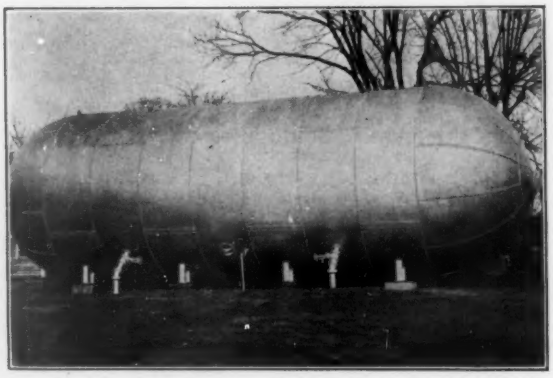


FOR HIGH
AND
LOW PRESSURE



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GAS STORAGE

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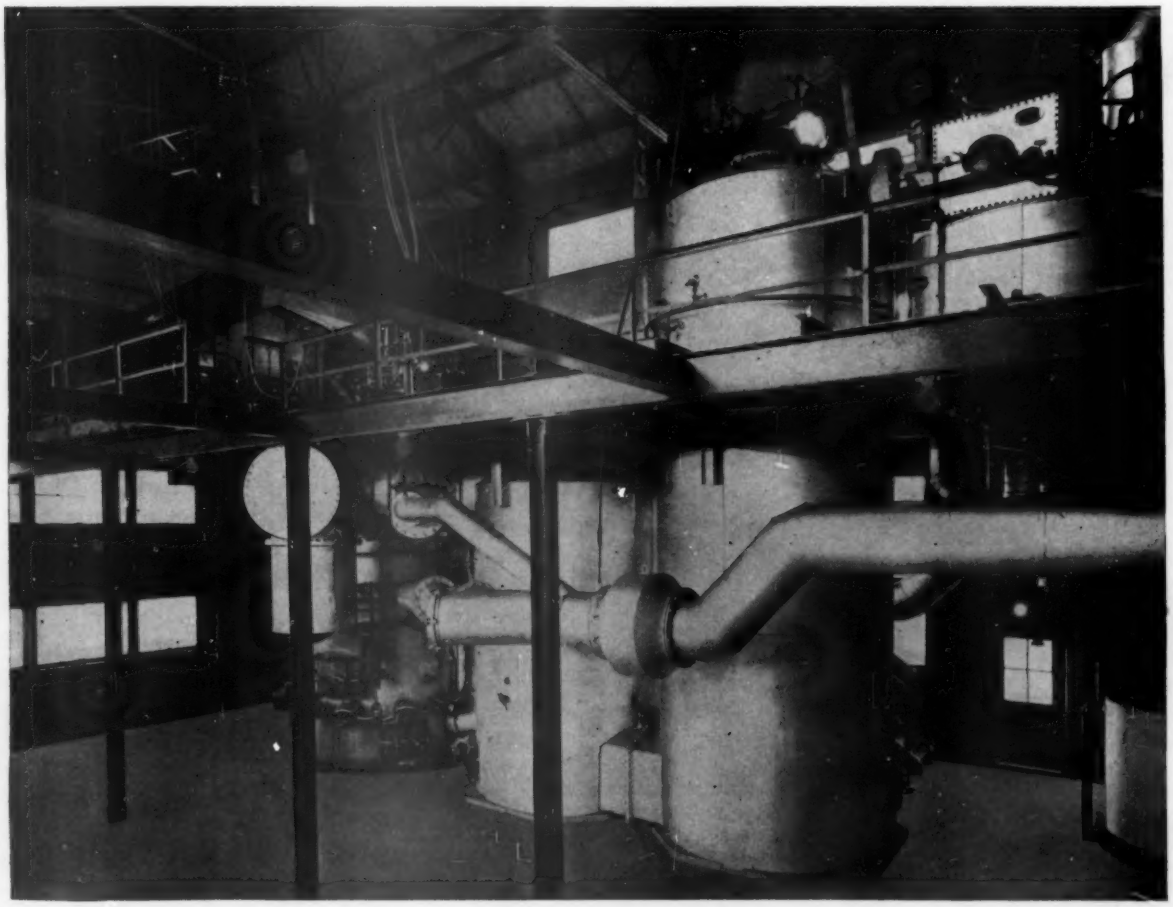

A Semet-Solvay gas works is a manufacturing plant, designed to obtain the utmost results from valuable raw materials at lowest capital and operating costs. It is run by skilled workmen and ***every step is precisely controlled and accurately recorded.***

The days when "gas houses" were associated with grimy surroundings are gone forever. Such a plant as the one illustrated is bright and clean, inviting a high order of housekeeping. It discharges no wastes and there is nothing about the process that would be a detriment to any urban neighborhood.

We feel a modest satisfaction in having contributed very materially to this evolution.

SEMET-SOLVAY
ENGINEERING CORPORATION
Division Allied Chemical and Dye Corp.
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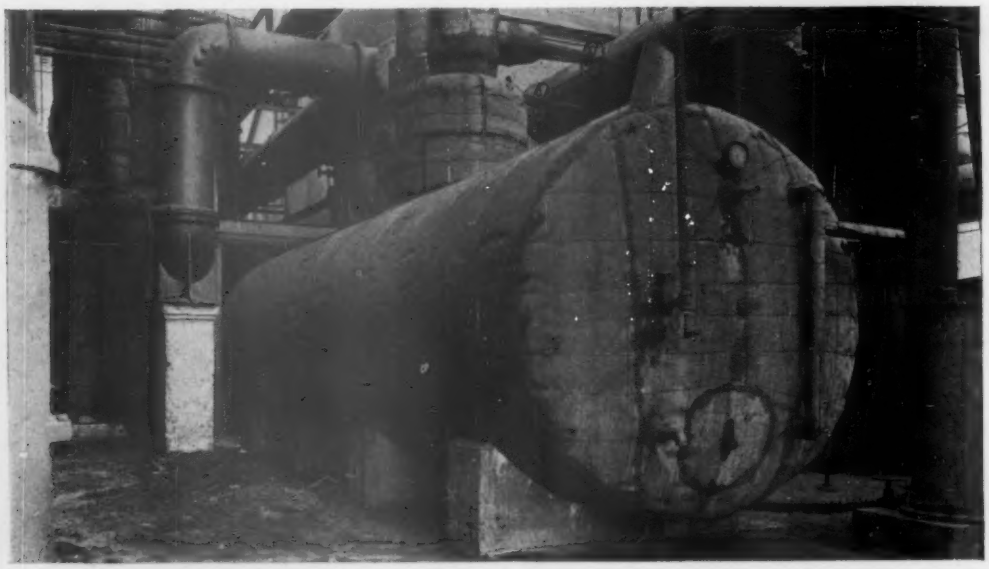
SMOOT STEAM ACCUMULATOR



The SMOOT STEAM ACCUMULATOR at the Spring Gardens Plant, Consolidated Gas, Electric Light & Power Company of Baltimore

IN addition to a SMOOT STEAM ACCUMULATOR at the Spring Gardens Plant, the following systems of Smoot Control are in continuous operation:

SMOOT CONTROL OF COMBUSTION regulating the fuel and air from a MASTER CONTROLLER and maintaining uniform steam pressure and complete combustion in the boiler plant.

SMOOT CONTROL OF WATER GAS MACHINES regulating steam volume Primary and Secondary air to each set from a Master Controller.

SMOOT CONTROL at the Spring Gardens Plant Insures a Continuous Production of Gas Efficiently.

SMOOT ENGINEERING CORPORATION
136 Liberty Street New York

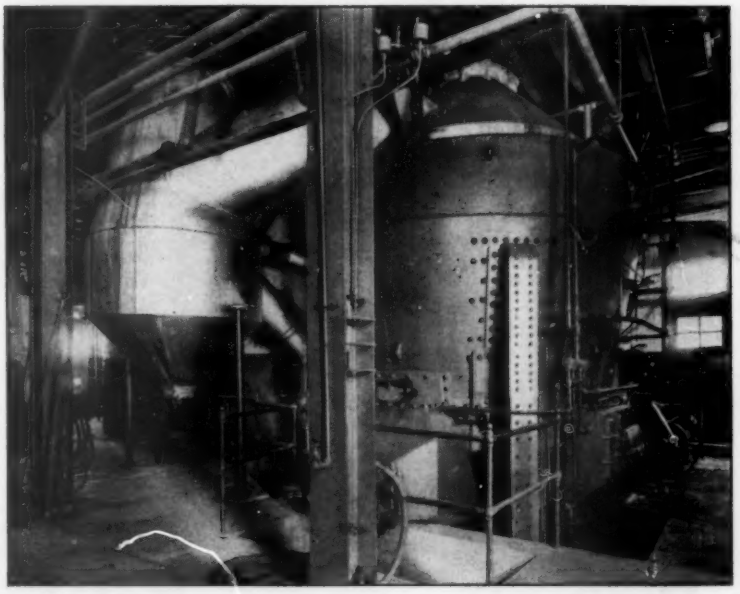
SMOOT CONTROL

The new U. G. I. *Cyclonic Dust Catcher*

....another contribution to the industry

The new U. G. I. Cyclonic Dust Catcher —now in operation at Paterson and Camden, N. J.—has the following advantages:

- Removes blown-over fuel, including very fine dust, at the outlet of the generator.
- Has very high efficiency of dust removal.
- Greatly decreases number of recheckerings necessary.
- Reduces cost of recheckering and shutdown time.
- Prevents erosion of carburetter wall and checker supporting tile.
- Particularly advantageous when using soft coal as generator fuel.
- Increases efficiency of oil utilization because checker brick remain cleaner.



The U. G. I. Cyclonic Dust Catcher can be installed on most any water gas set and will pay for itself in about a year's operation.

THE U. G. I. CONTRACTING COMPANY
DIVISION OF
UNITED ENGINEERS & CONSTRUCTORS
INCORPORATED
DWIGHT P. ROBINSON, PRESIDENT

Broad and Arch Streets, Philadelphia

Chicago New York

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

In choosing a high temperature cement consider these points!

1—Will the cement remain serviceable at maximum furnace temperature?

2—Is the cement suitable for making thin joints between the brick?

3—Will the cement resist slag or ash attack?

4—Will the cement squeeze out of the joints in service?

5—Will the cement resist corrosion at the joints?

6—Will the cement aid in reducing spalling?

7—Is the cement free from shrinkage?

8—Has the cement a strong bond from air set to operating temperature?

9—Does the cement depend on active fluxes for its air setting qualities?

10—What of the working characteristics—will it remain in suspension and can it be used for trowelling, dipped joints and spray coating?

Every requirement is met by GREFCO

GREFCO, a chrome base high temperature cement, is free of sodium silicate or other active fluxes.

It maintains a strong bond from air set to its fusion point of over 3400° F. It is ideal for making the thin joints so essential to lasting fire brick construction.

GREFCO is highly resistant to the attack of slags, fuel ash, metals and metallic oxides. It also aids in reducing spalling.

As easily worked as ordinary fire cl[illegible] mortar. It does not settle in the mortar box. Equally suitable for trowelling, dipped joints or spray coating. Unaffected by atmospheric conditions.

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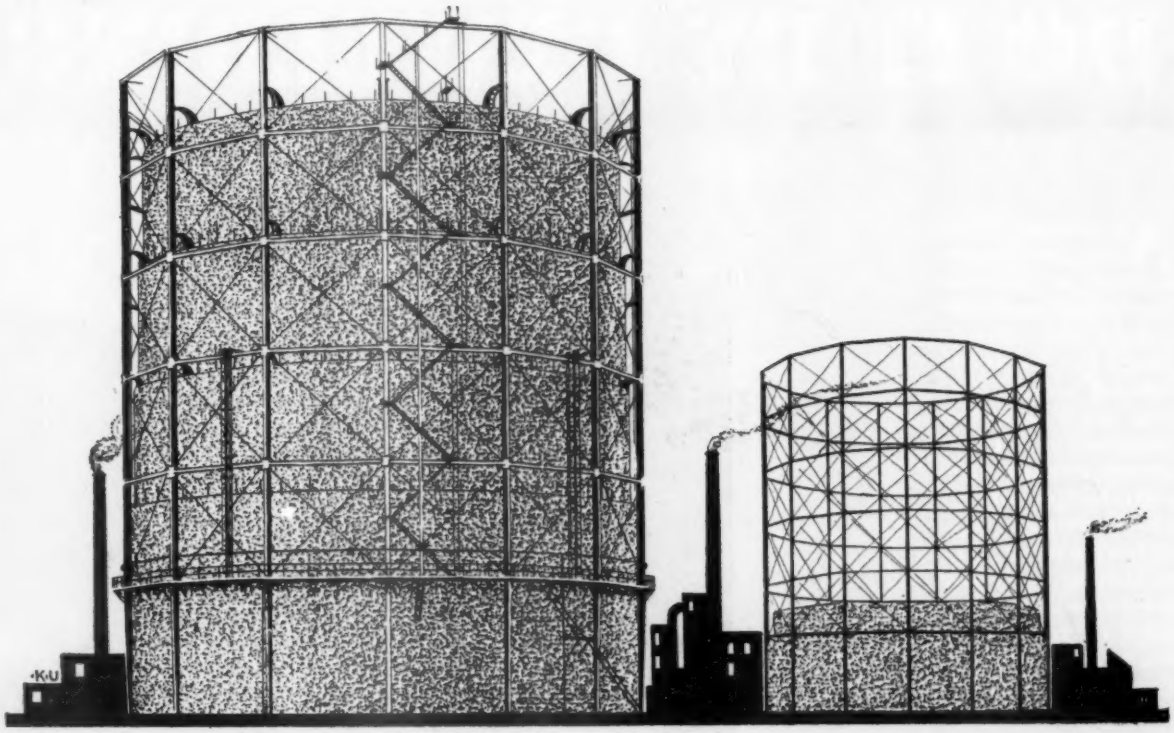

Our Calking of Every Inch of Seam Shows in Your Reduced Operating Costs

The calking of both heavy and light plates is but one detail in the assembly of your Gas Holder. Yet, carefully done every inch of the way, it has a distinct bearing on the low costs for which you strive.

And it speaks for the care that enters into every other detail embodied in Cruse-Kemper design and construction.

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Ambler, Pa.

Design that Fits the Purpose

Highest Grade Materials

26 Years of Experience

DO IT BY OXWELDING

AS pioneers in every phase of oxy-acetylene welding and cutting, the thoroughly experienced engineering and service organizations of these companies can help you in the proper application of oxwelding to your present work and to new production activities.

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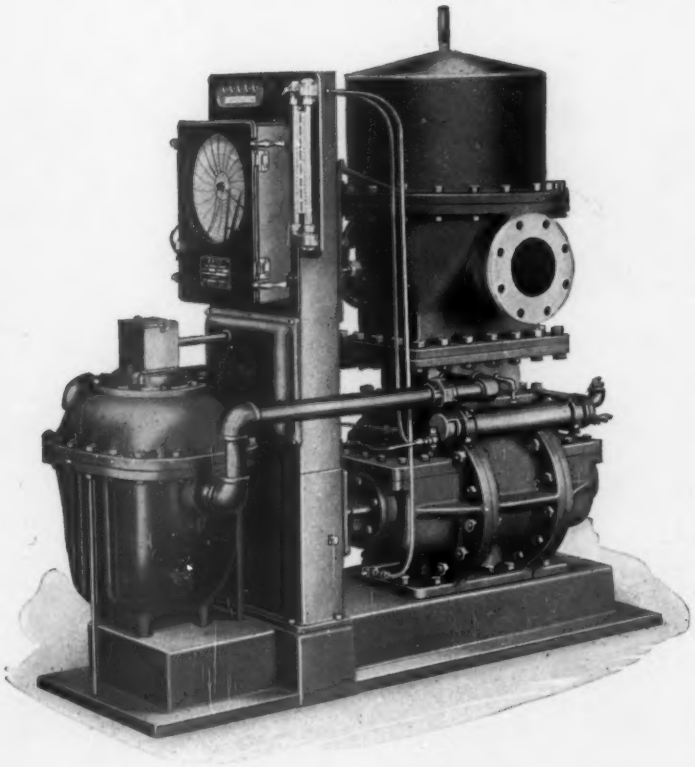
Modern Connersville Equipment Increases Gas Distributing Efficiencies



How much gas are you Losing at peak loads?

One of the problems of the gas industry has been the accurate measurement of gas that is consumed in a varying volume—on distribution lines—at "city gates"—on large consumer installations.

The Connersville Tandem Meter meets this requirement by handling loads ranging from zero to 200 per cent of the normal rating of the standard Connersville Meter that is used. In this unit—for it is a unit, operating entirely automatically and having only one register, also only one inlet and one outlet opening to be connected into the gas line—you have that characteristic of Connersville Meters which assures dependably accurate measurement of gas flow at the peak load conditions—the time when the greater volume of gas is being consumed.

The Connersville Tandem Meter is another of the developments in gas handling equipment which this company has made for the gas industry. Ask for Bulletin 4D which describes this Meter.

The Connersville Blower Company
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CONNERSVILLE

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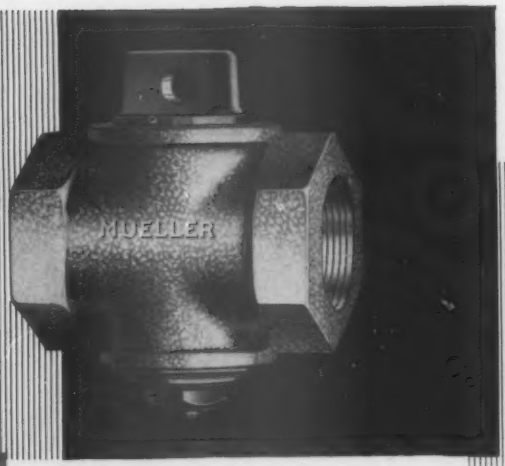
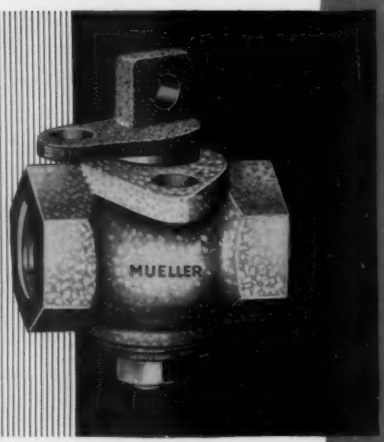


At left: Mueller G-11100 Flat Head, Iron Body Brass Plug Service Stop.
Below: Mueller G-11080 Iron Body Brass Plug Meter Stop.



Quality-
or service failures?

It's not what you pay on the market—it's the cost of repairing failures that determines the price you actually pay for stops.

The name of Mueller has been a guaranty of value for over three-quarters of a century. The enduring service of Mueller Iron Body Stops has caused leading gas companies to standardize on them the country over.

Made of the best gray iron—hot galvanized, with keys and washers of Mueller Red Brass and designed to provide the greatest strength where strength is needed, Mueller Iron Body Stops stand up under the heaviest installation strains.

(Established 1857)

MUELLER CO. **Decatur, Illinois.**

Branches: **New York, Dallas, San Francisco, Los Angeles**
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MUELLER

Write for the complete catalog of Mueller gas service goods

COOPER GAS ENGINES
for PEAK LOAD DISTRIBUTION

FOR high pressure transmission, with compressors operated only a few hours per day, the Cooper Gas Engine is the logical prime mover.

The Cooper Gas Engine develops the greatest amount of horsepower from the least amount of gas. Fuel is consumed only when gas is being compressed. The Cooper is always ready for instant starting. Its performance is as unfailing as the gas supply itself. When the engine is stopped, all operating expense stops with it. It is this flexibility, this economy, this reliability that is winning Cooper a place in manufactured gas distribution. *Write for test facts and figures.*

Cooper Type 19 is an intermediate size gas engine — built for conditions where the utmost in continuous, reliable and economical operation is desired. It provides maximum power for minimum weight. Installation and maintenance costs are exceptionally low.

Rated 380-400 B. H. P. as single tandems and 760-800 B. H. P. as twin tandems for direct driving compressor cylinders rotary blower or electric generators.

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Formerly The C. & G. Cooper Company and The Bessemer Gas Engine Company

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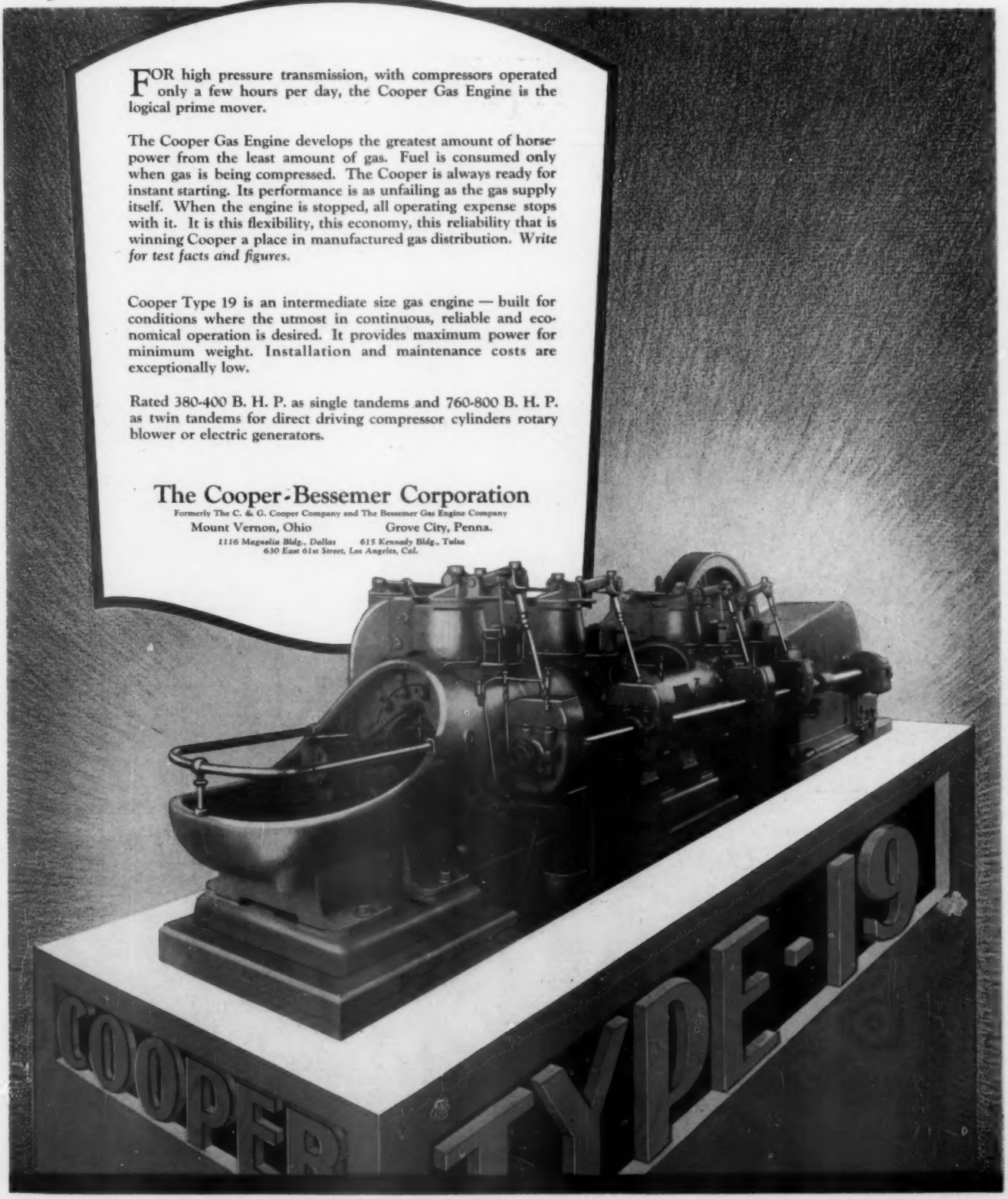

"INDUGAS"

VERTICAL CHAMBER OVEN

With Water-sealed Drop Door
INTERMITTENT TYPE

Minimum Labor
Low First Cost

The annual operating reports of the Association of Swiss Gas Plants disclose that the "INDUGAS" ovens produce the largest yields of gas per ton of coal.

The following table shows the actual average yields from coal containing less volatile matter than the average American coal:

City	Time	Yield cu. ft. per net ton	Heating value B.t.u. (gross)
Baden, Switzerland	4 years average	14075	560
Olten, Switzerland	2 " "	13317	570
Friedrichshafen, Germany	4 " "	16045	515

There's a Reason

Full information, layouts and estimates gladly furnished

INDUGAS COMPANY, Inc.

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Positive *and* Economical Treatment of Tar Emulsions

APPARATUS

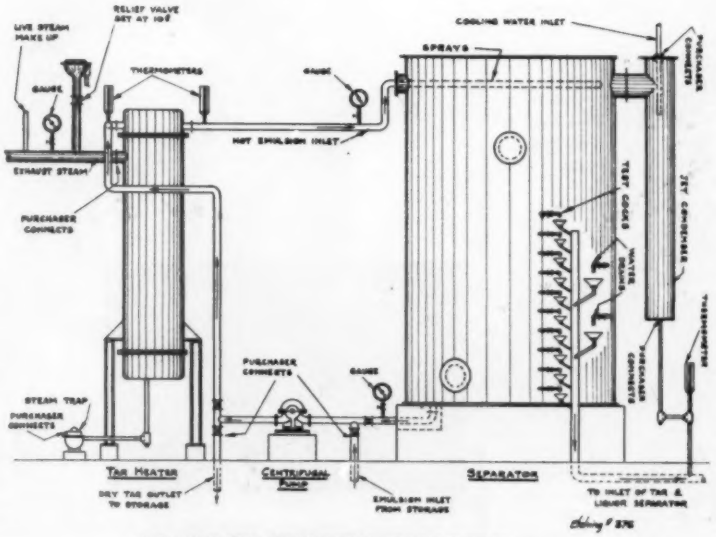
1— Separating Tank which contains Emulsions to be treated.

2— A circulating pump.

3— A heat exchanger using exhaust steam.

4— Separating sprays in top of separating tank.

5— A small Jet Condenser for condensing small amounts of light oil and water vapor.



KLEINMAN TAR DEHYDRATOR – ILLUSTRATIVE.
PATENT APPLIED FOR

PROCESS

1— Pumping to a pressure which gives 5 pounds per square inch at the spray nozzles.

2— Heating Emulsion to about 220° F.

3— Emulsion leaves sprays reducing the pressure causing some of the water to flash into steam which breaks up the emulsion *without foaming*.

4— Mechanical separation in the separating tank.

5— Drawing off separated water.

6— Drawing off tar to dry tar Storage.

RESULT

A dry tar containing about 1% moisture.

Send for full details of design and operation of this Positive and Economical Process.

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In Generator Linings...

Combat The Severe Conditions With These Super-Refractories

IN few applications is refractory construction subjected to such severe operating conditions as those encountered in generator linings. Hot gases, intense heat, abrasion of descending fuel, mechanical abuse in clinker removal and slagging action of fuel ash are a few of the factors that attack generator brickwork.

To gas plants interested in improving the service of generator fire brick construction, these Super-Refractories are recommended:

ADAMANT-ADACHROME *Fines,* (Mixture F-131, composed of one part of ADAMANT Cement by volume, three parts of ADACHROME *Fines* by volume, and one part of water by volme), for laying up the brick;

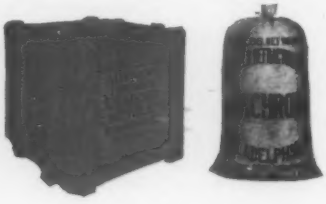
ADAMANT - ADACHROME *Aggregate,* (Mixture C-131, composed of one part of ADAMANT Cement by volume, three parts of ADACHROME *Aggregate* by volume, and one part of water by volume), for surface-coatings applied by means of The ADAMANT Gun, on new linings and for periodic surfacings for linings in service.

Generator linings and other fire brick construction last longer and are less subject to abrasion slagging and other destructive actions when they are frequently coated with Mixtures of ADAMANT - ADACHROME *Aggregate,* blown on by means of The ADAMANT Gun (Price only $25.00).

Fire brick bonded with the proper Mixture of ADAMANT-ADACHROME *Fines* have strong, firm joints that hold their bond through the life of the structure. Joints cannot open up; courses cannot creep or travel; walls cannot bulge.

Coatings of the proper Mixture of ADAMANT-ADACHROME *Aggregate* (blown on by means of The ADAMANT Gun) fill up and seal the joints and brick pores, giving the brickwork a super-refractory surfacing that retards abrasion, protects the structure from the slagging action of fuel ash, intense heat and practically every destructive action encountered in generator operation.

To gas plant officials interested in improving generator lining service, we shall be glad to send complete data on these Super-Refractories. Write us today.



ADAMANT Fire Brick Cement is shipped in 100 lb., 250 lb. and 400 lb. air-tight, metal containers. ADACHROME *Fines* and ADACHROME *Aggregate* are shipped dry in 125 lb. paper-lined, burlap bags. Stocks are maintained by distributors listed at the left.

BOTFIELD REFRACTORIES CO.

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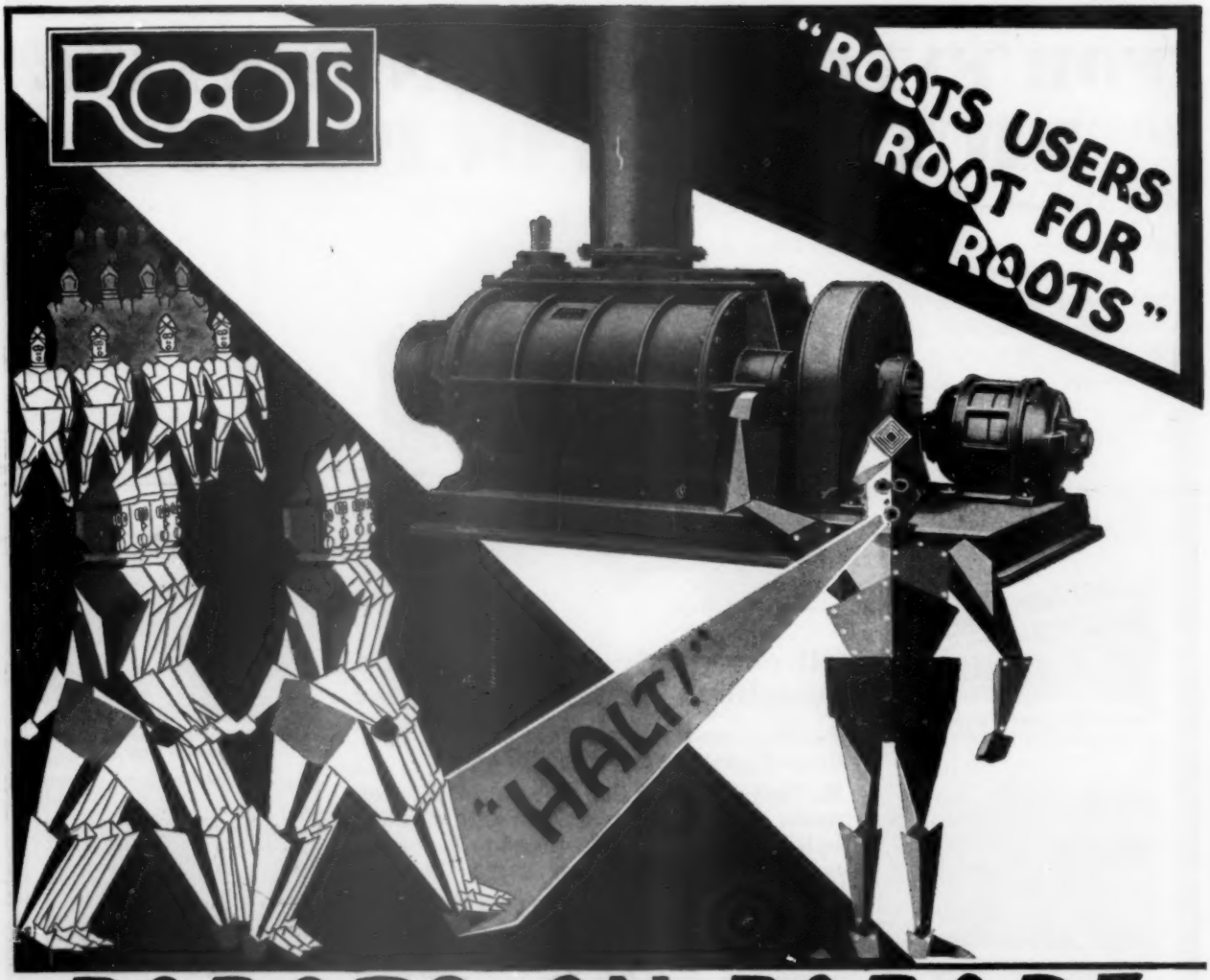

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10,000 lb. of high pressure steam could be produced from this waste by Dry Quenching.

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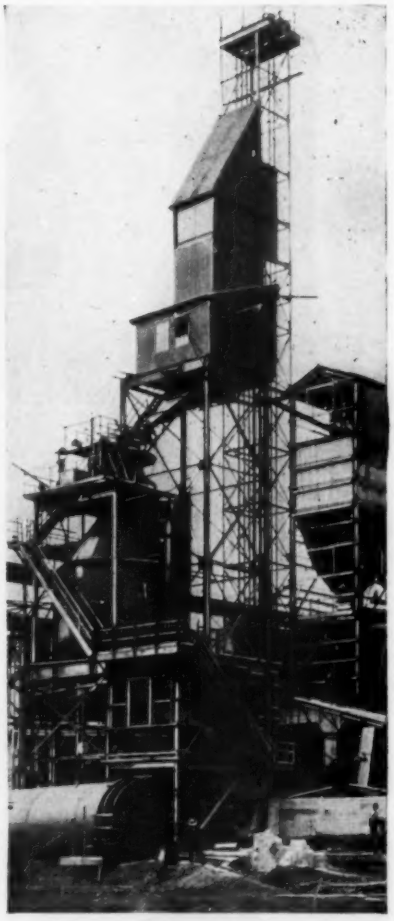
By Dry Quenching the heat in the hot coke is converted into useful energy—high pressure steam. Using no water, the damage to hot coke cars is eliminated and no corrosive vapors are released to injure plant steelwork.

Dry Quenching of coke is a step forward in coke quenching practice.

Literature describing and illustrating the Sulzer Dry Quenching system is available to those interested in cooling coke.



A typical Dry Quenching installation

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Ask any man in your line. And if he answers—"as good as a Darling" you'll know he has given the question of gate valves the study it deserves, made some actual comparisons and checked up on results.

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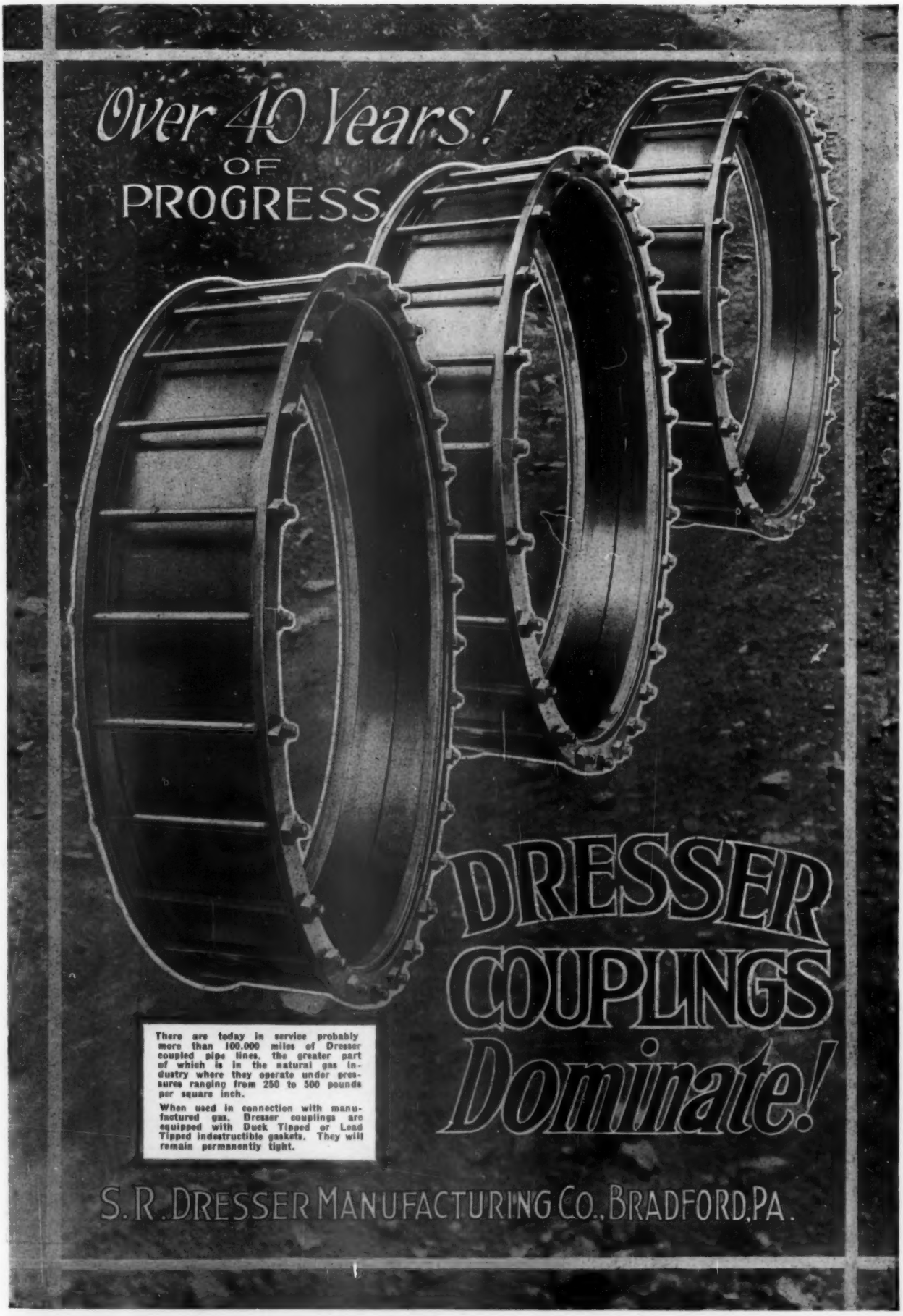
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There are today in service probably more than 100,000 miles of Dresser coupled pipe lines, the greater part of which is in the natural gas industry where they operate under pressures ranging from 250 to 500 pounds per square inch.
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GAS HOLDERS

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AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry
Including GAS INDUSTRY Est. 1900

HENRY M. RILEY, *Editor*

Gas Refrigeration Possibilities

DURING the past ten or so years civilized countries have witnessed truly astounding developments in appliances and agencies whose sole mission is to promote better and more comfortable living conditions for their inhabitants. In America especially, one can almost say that our daily lives are ordered and guided by mechanical masters. And, incidentally these masters are merely very obliging and uncomplaining servants when kept in a healthy, workable condition.

Gas has been lavish in contributing to better and healthier living,—the gas range has reduced cooking to a pleasure; automatic water heating is an indispensable service, and gas house heating is surely emerging from the status of a luxury, with incineration and laundering not far behind.

Our latest addition to the family, gas refrigeration, is proving its right to increasing use in the home as a preserver of food but not far ahead loom desirable and very possible tasks for this appliance. We refer to the cooling of homes and other places where one must spend a portion of his time during the daily round.

Practically everyone can keep himself warm during the cold weather but even the wealthy find it difficult to maintain bodily comfort when the heated spells put in an appearance. Indeed, the latter will go to no end of trouble and expense to seek out a cool locality when the thermometer and humidity begin to climb. Moreover, many of the well-to-do might be interested in purchasing the proper gas refrigerating unit if such a device were developed and vigorously sold. This unit could be built into the home or it might be of a semi-portable nature.

It might be contended that the cost of operation would be prohibitive but it should be borne in mind that the unit would not be in operation every hour during the summer months. It is perhaps the case that most of us would not whimper if the maximum temperature during summer did not exceed seventy six degrees, or slightly higher, for that matter. It is also likely that the degree hours over this figure for summer would not run to such a high figure for, say, the Middle Atlantic states. In lieu of accurate figures we venture the opinion that three hundred dollars would give a lot of bodily comfort during the summer by way of house cooling. And there are a lot of people who can afford this price.

Railway pullmans and commuter trains parked in the boiling sun pending starting time also offer possibilities for gas cooling.

Prolific research will convert gas refrigeration possibilities into actualities.

"Guts" and the Game

ELSEWHERE in this issue will be found the reprint of an address "Some Trends in Industry," by Alfred Kauffmann, which we heartily commend to our own industry, from office boy to Chairman of the Board.

In his address Mr. Kauffmann makes use of two expressions, "it takes 'guts' to stay in the game," and, "the opportunity is here—if we don't take advantage of it, then the advancing waves of other people's progress will sweep over us and wash us out," both of which, we believe, have a refreshing application in the gas utility business.

In any line of endeavor the equation, *Guts = Horse Sense + Elbow Grease*, comes pretty close to constituting an immutable law of success. Our prehistoric ancestor had enough gray matter in his retreating cranium to know that a show of "guts," as exemplified in the lusty whack of a bit of tree limb on the head of a cave bear, not only guaranteed a longer lease of life and a well lined paunch but just about rendered him the "cock of the walk." In the meanwhile, his more timerous brother who had witnessed the conflict from a tree top doubtless came in for a blistering round of tongue-lashing from the female contingent, received a scant bone to solace his food craving and continued in his role of assistant pot-washer to the clan.

The analogy can be fitted to the gas business when we consider that the man who will expend the mental and physical effort to further his company's success will profit by way of advancement in position and salary—contrary, the less energetic fellow worker will be "washed out" by the backwater from the former's progress.

Of a verity, it requires considerably more than a smattering of "horse sense" and vim for a gas company employee to improve his standing in the company by way of occupying some of his off-time hours in taking a night course at school. It calls for "sand" for an engineer to work out and doggedly back a plan that will save money for the gas manufacturing plant, for instance. And in the aggregate, it requires intelligent hardihood for a gas company as a whole to formulate and aggressively follow out a new procedure for securing a legitimate share of the buying public's dollar. It is only by these and similar tactics that the gas man and the gas industry itself will be able to stay in the game and escape the baneful backwash from competitive sources.

However, we humans change but little in the passage of the centuries, and regardless of well intended homilies and preachments, the larger percentage of individuals will be found lacking in initiative to do things on their own account. Fortunately American industry has always been able to muster a sufficient number of men with "guts" enough to stay in the game and ably administer its affairs and these will increasingly reap the success that cannot be denied such an attribute. In this regard fortunately, the Gas Industry has been well in the van.

Better Utilization of Petroleum

THERE has just been announced an important new development which has been made by the Standard Oil Company of New Jersey in the hydrogenation of petroleum which promises revolutionary improvement in this field. It seems likely, in fact that hydrogenation is going to prove just as large a step forward in petroleum utilization as were the cracking processes developed about two decades ago.

The gas industry has a substantial interest in these developments. If, as forecast, approximately 100 per cent of the original crude oil is to be converted into gasoline, it will be well to consider what is then to be the source of gas oil. There is no need for alarm on this score; but there is need for serious economic study.

It would seem as though the time were right for the gas industry, perhaps through the Committee on Engineering and Economic Survey, to make a new appraisal of petroleum resources as they relate to the supply of carburetting oil for our business. The interests of the gas industry and the petroleum industry are intimately interlocked. There will be no difficulty in securing through the most progressive petroleum companies and perhaps through the American Petroleum Institute any needed cooperation for such undertaking.

Merchandising Service

THE APPLIANCE SALESROOM of the gas company is the logical outlet for every appliance for the home that uses gas for fuel. This is recognized very largely by the consumer who has a gas service in his or her home. They feel they are getting not only a high grade appliance when they buy from the gas company, but also the one that will best meet their requirements.

During the past few years great sums of money have been spent by manufacturers to develop what might be termed specialties, such as laundry dryers, incinerators, refrigerators, house heating boilers, etc. Manufacturers of gas ranges, water heaters and room heaters are also spending thousands of dollars annually to improve their product and to build sizes to meet every requirement. It is largely the enterprise of these men that helps the gas companies keep and increase their domestic load, and to meet the energetic competition of our electrical friends.

Therefore, when a gas burning specialty such as

clothes dryers, incinerators, refrigerators, etc. are called to the attention of the gas men they should give them special consideration. The sale of these appliances at present is limited as compared with ranges, water heaters and room heaters. But, there are in every community served with gas, a number of customers who can well afford these appliances and if they could see one and examine it, they would buy. And the sale of one always makes others want one too.

Therefore, it would seem only logical that every gas company Appliance Department should have on its sales floor at least one standard make of these so-called specialties. Don't say "We can't sell any of this or that appliance in our territory." You can if you have one on your showroom floor, and whether you should sell only one, a dozen or a hundred during the year, the fact remains that every single installation adds just so much more gas load, and in addition gives your appliance department added prestige with your customers in their thought that they can get from you any kind of appliance for their home that uses gas as a fuel.

They are about to celebrate.
One half the time they are afraid they will work out a cooperative plan and the other half they are afraid to try.

Vacation Reminders

GAS COMPANIES can well afford to hold up their heads when comparing the interest they take in the welfare of their employees with other lines of business and industry. And at this time, when thousands of the gas industry's workers are en route to vacation land, it would seem fitting for them to give a few moments consideration to the many ways in which their well-being is solicitously fostered by their particular company.

Gas companies generally, allow all of their employees two weeks for vacation with pay. Many rightly require those eligible for such a leave to be in their employ for a reasonable length of time; that is, sufficiently long to convince the management that they are not mere "job jumpers." As a matter of fact, some companies demand that the employee take a vacation whether the latter does or does not desire to avail himself of the opportunity. Further, some organizations very sensibly will not permit the employee while on vacation to indulge in any occupation for financial gain. This is a quite proper procedure.

In addition to the allowance of vacation time gas companies are increasingly devoting painstaking attention to the employees' health by way of physical examination and medical service. Hand in hand with this latter welfare work goes the matter of pensions and pay for sick leave and, we believe, there are instances where gas companies pay the employee's family a modest sum upon his death.

Over and above the foregoing services, we have the various social activities which so many companies generously subscribe to, both morally and financially.

There may be businesses which go even further than these lengths in endeavoring, literally speaking, to make the employee happy in his work. If such is the case gas companies have not heard of it.

Gas companies are taking an extremely active interest in their best asset, the employee, and the latter should ungrudgingly acknowledge that he is working for an institution far removed from the Scrooge class.

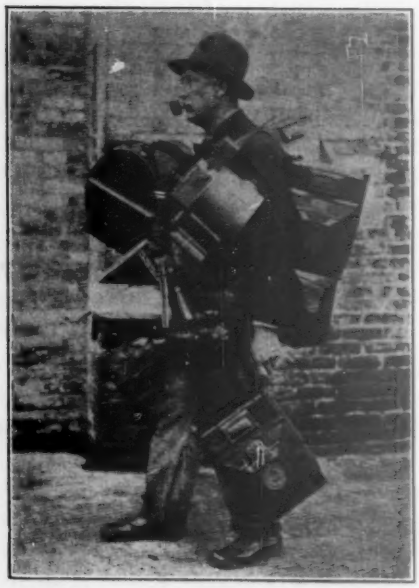
Should Gas Rates Be Much Lower?

ELECTRIC COMPANIES have found it an advantage to lower their rates according to Matthew S. Sloan, president of the New York Edison Company, who expressed this idea at the recent convention of the National Electric Light Association in the following language.

"It seems to me more than a coincidence that in every case I know of a reduction in domestic electric rates has been followed by increased use in service."

We wonder whether a similar philosophy with respect to gas rates might not give a new stimulus to sales and a new boost for dividends in many companies which are perhaps creating unnecessary sales resistance by their present rate schedules.

In The Olden Time

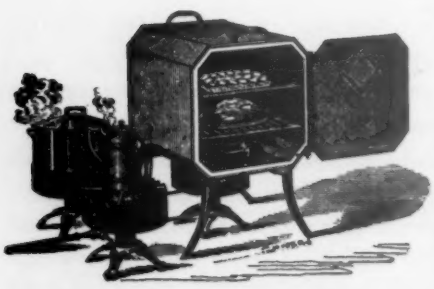


Courtesy, Baltimore Gas & Electric News

Top—The kind of gas bill the customer received at a time when gas must have been a genuine luxury. The rental charge for meters is interesting

Left—A meter setter of sixty years ago. In the good old days it was a real job for this man to fare forth in the early morn loaded with meters to be set and then, to wearily plod his way back to the gas-house in the evening bedecked with the meters he had removed

Lower left—An early gas range ad appearing in American Gas Light Journal. A perusal of this ad will clearly show that the matter of increasing the load was uppermost in the old-timer's mind
Lower right—First subscriber to American Gas Light Journal; Wm. W. Fox, President, New York Gas Light Company



The Retort Gas Cooking Stove.

ECONOMY AND COMFORT.

JUST THE THING FOR

Summer Cooking.

Does not heat the House.
Cheaper than Coal, Wood or Oil.
Actually perfect combustion—hence without Smoke, Smell, or Taste of Gas.
Also, economy over other Stoves.
Over one hundred Gas Companies are selling them to their consumers.
Every twenty-five in use increase day consumption by 1000 feet.
Send for circular and reference.

THE RETORT GAS STOVE CO.

PROVIDENCE, R. I.

EDITORIAL REMINISCENCES

AMERICAN GAS JOURNAL PASSES ITS SEVENTIETH MILESTONE

1859-1929

BY S. J. Krake

PRESIDENT, AMERICAN GAS JOURNAL, INC.

WITH this issue American Gas Journal enters its seventy-first year of service to the American Gas Industry. Up the years from the date of its founding, July 1st, 1859,—under the title American Gas Light Journal—its pages have faithfully endeavored to accurately reflect the best thought of our industry and its policy has been unswervingly directed toward the goal where gas will be acknowledged without peer in its particular field.

Although the methods of making, distributing and selling gas have changed astoundingly during the past seventy years, a casual perusal of the first few issues of American Gas Light Journal leads one to believe that there has been little if any change in the industry's most important cog,—the human element. In those bygone days gas men seemed to be just as ambitious and desirous of learning new methods and getting along as is now the case. There was just as much enthusiasm and energy evinced in the growth of the output from year to year; just as much eagerness to assume responsibilities—and the old-timers must have had responsibilities in goodly quantity.

Probing the Future

In view of the enormous use of gas for industrial purposes one must admit that the old-time gas man used his reasoning faculties to probe the future in a manner better than even he knew. In this connection there is reproduced below an item from the first issue of American Gas Light Journal.

> "Rolland Bread Company—This Institution opened its doors in the new Fifth Avenue Hotel, on the corner of 23rd street and 5th avenue, on Saturday, 11th June, under the management of our friend Mr. Daniel Messinger. The bread is sweet, well-kneaded, thoroughly baked, and of delicious flavor, and since the first delivery, early in June, has come rapidly into general use. It is the intention of the company, we believe, to sell rights of their patent for the several States. Why do they not adapt their ovens to be heated by gas? A visit to their beautiful rooms will repay the curious, and we are sure our friend Messinger will need no other support while he leans so gracefully on the Staff of Life."

Today the writer of this item has his query answered in the many commercial gas-fired bake ovens for turning out the "staff of life"; to mention nothing of the millions of gas ranges that frequently assume a similar role in the home kitchen.

Gas companies, almost from the time of their inception, have been prolific dispensers of information to one another. In this present day such interchange finds a vehicle in the various gas meetings and conventions, gas company house organs and the gas trade papers. Interesting mention is made of this phase in the following portion of an editorial appearing in our August 1st, 1859 issue.

> "Until the present moment new companies have labored under serious disadvantages from the difficulty of ascertaining the best mode of building and equipping their works. Represented by no organ of their own, they have groped about in darkness, picking up, piecemeal, here and there, what little information they could find floating about, and boring the old companies for treatises on their experience, until, we are told, the officers of one of our largest city companies were about establishing, at their own expense, a bureau for imparting information, in order to save their time, which was laid thus under serious contribution by inquirers. Since the publication of the *American Gas Light Journal,* they have recommended their correspondents to transfer their queries to us, which they have done by sending us their subscriptions, and we will be happy to reply to all, as far as we are able."

Many gas company accountants perhaps harbor the idea that present-day accounting along generalized lines is relatively new and yet, an item which appeared seventy years ago in American Gas Light Journal convinces us that the oldsters sensed the need for just such standardization. We give the item herewith.

> "It is evident to us that some general system of keeping accounts might be adopted by all the gas-light and water companies, in order to simplify that department of the business. Although a private matter with each company, with which other companies have nothing to do, yet, any improvement in it could not but be acceptable; and if the various companies will send us their forms, we will glean from the mass what we think the choice points, and present a skeleton of them in a future number."

Good Advice

Today money invested in the gas utility business is rather well recognized as representing a high quality of financial sense. The Journal preached just such a doctrine seventy years ago. Witness the following portion of an editorial from September 1859 number.

> "While our shrewd bankers, brokers, merchants, and operators have been running after locomotives through every State in the Union, piling up their first, second, third, and fourth mortgage bonds, farm mortgage bonds, construction bonds, income bonds, and every other sort of bond, that has left them "bondsmen" with a vengeance, in the end, our Quaker friends in Philadelphia, more quiet, less excitable, and a thousand times more judicious, have been cooly and calmly reading by their own gas-light the semi-annual reports of their favorite investments, and, with scarcely

an exception, receiving regularly their four, five, and six percent semi-annual dividends from sound, substantial gas-light companies.

"During the crisis of 1857, and through the prostrate months of 1858, when the railway whistle assumed the vocative tone, in quasi ridicule of deluded creditors, gaslight champions were calm, comfortable and contented."

People Don't Change

There were tricksters and dead-beats in the "good old days" to harry the gas company. The following item furnishes proof that present-day meter by-passers had forebears who perhaps exceeded them in sheer, unadulterated effrontery. Herewith is cited a "little" difficulty a gas company had to contend with in the late fifties.

"N. Y. Superior Court.—The Manhattan Gas-Light Company against Frederick A. Smith.

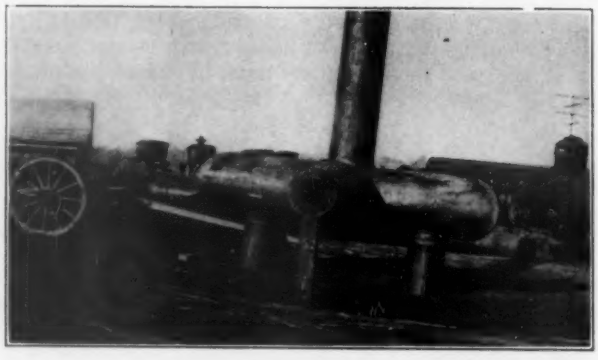
The defendant in this action applied to plaintiffs to light with gas his drug-store on First Avenue, New York, promising to make a deposit, as required by the rules of the company. Plaintiffs accordingly furnished and placed in the store a gas-meter, and connected the same with their mains, through which the store was lighted. After this was done, defendant refused to make the required deposit, and also refused to permit plaintiffs to take away their meter, or to disconnect it from the mains. After several efforts to obtain the meter, which were resisted, and rendered ineffectual by defendant, who continued to burn the gas, plaintiffs commenced this action, under the Code, for the possession of their meter. The sheriff broke open the closet in the store, in which the meter was nailed up and attempted to be kept by defendant, carried away the meter, and delivered it to the plaintiffs. The case came on for trial before the sheriff's jury, who, after hearing evidence of all the facts, found a verdict for plaintiff for $50 damages for the detention of the meter, and for this amount, with costs of suit, judgment was entered against defendant."

Advertising Ethics

From the standpoint of advertising also the pages of the old American Gas Light Journal set forth in modest and ethical language the merits of the various accessories and equipment offered the industry. Indeed, from every angle those pioneer editors wrought well, setting a standard of editorial excellence which still serves as a beacon to guide the present American Gas Journal safely along to the century mark and beyond.

Welded 'Specials' Aid in High-Pressure Gas Transmission

Welded Piping at Pumping Station



Header Showing Bull Plugs Welded Flange and Reducing Nipple

A Welded 5-Piece Bend

Making a Cut-Out Reducer

Photos Courtesy Linde Air Products Co.

Long Distance Manufactured Gas Transmission

By Martin T. Bennett

Gas Engineer, Railroad Commission of Wisconsin

ONE of the most interesting developments since the rebirth of the gas industry has been the advent of long distance transmission of gas. The natural gas industry started and developed the technique of laying long mains across the country. In recent years the manufactured gas industry has found a fruitful field for expansion as well, and has effected unexpected economies by supplanting small inefficient plants with high pressure gas from larger plants where operating costs are lower.

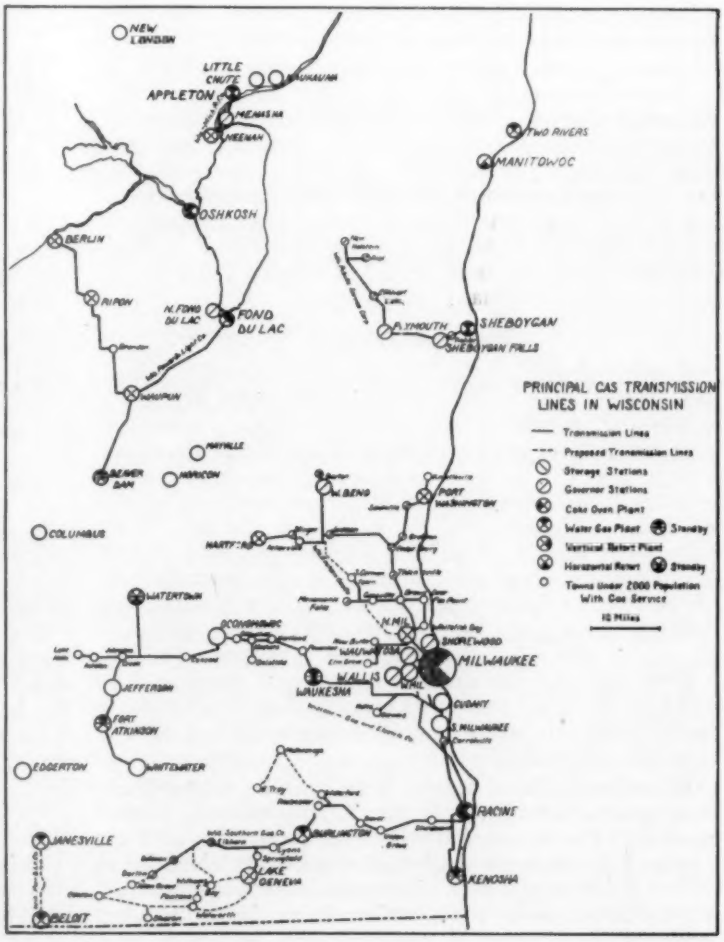
The natural gas lines are gigantic and the manufactured gas lines cannot yet be compared to them. When one realizes that there is practically continuous network of lines, mostly twelve inch or over, running from Brownsville in the southern tip of Texas to New Orleans, Louisiana in the east, to Memphis, Tennessee in the northeast, to St. Joseph, Missouri in the north, and to Denver, Colorado in the northwest, it is hard to believe that manufactured gas lines will ever reach any such proportions. However, if you will look at the map of the southeastern corner of Wisconsin and bear in mind that practically none of these lines were in existence five years ago and less than 12% of them were in existence two years ago, you will believe that manufactured gas has had a fair start.

Avoiding Early Mistakes

Most of the methods of construction of equipment for transmission of manufactured gas have been borrowed from the natural gas, but the manufactured gas industry has had the advantage of making a new start and has been able to avoid many of the troubles and mistakes the natural gas people have run into. Practically all of the mains are acetylene welded steel pipe. Some lines are extra heavy pipe, some light seamless tubing, and one company has been using second hand locomotive boiler tubing. Electric welding, except when done in the factory, has not received much favor, because of the expense of the equipment and because of the difficulties of moving the equipment around. Various coupling devices have not received much use, so far as I know, except that Dresser sleeves are often used as expansion joints.

One of the liveliest subjects of discussion among the gas men is the subject of pipe protection. Those that have been using cast iron pipe for many years are inclined to be very much afraid of leaving bare steel pipe in the ground. Others claim that if the money that would be spent on protection were to be put out at compound interest enough would accumulate so that about a quarter of the pipe could be replaced within twenty-five years. The conservatives (or are they the radicals?) say that within twenty-five years their lines will be covered by broad concrete highways and the expense of replacing them would be very great. The answer to that is usually that in twenty-five years the gas mains will be obsolete and inadequate.

All companies are coating some pipe. The amount varies inversely with the optimism of the designers. Some wrap the welded joints. Others wrap or coat pipe which is put in improved streets. All protect the pipe where it goes thru cinder fill or swampy country,



A paper presented at the seventh annual conference of state public utility commission engineers held at the U. S. Bureau of Standards, Washington, D. C., May 31-June 1, 1929.

while practically none protected the pipe in rural districts where soil conditions are favorable. The protection is usually some form of bituminous pitch with or without felt or cloth wrappers, although a proprietary article "No-Oxide" has received considerable favor in this state. When the pipe comes near to electric railways, it is necessary to isolate several sections with insulating couplings in order to prevent electrolysis.

"Snaking" Advantageous

Another subject of debate is that of expansion and contraction of the pipe. For a while some companies were putting in sleeves to allow for the contraction of the pipe. It has been found, however, that if the smaller sizes of pipe are "snaked" in the ground, this is not necessary. If a cast iron sectionalizing valve or any other cast iron fitting is put in the line, it is necessary to protect this against strain with a sleeve.

It would seem that the amount of cover that should be laid over a pipe would be a debatable subject, but for some unknown reason there seems to be pretty general agreement in this part of the country, at least, that thirty inches is desirable. Here the temperatures reach twenty-five degrees below zero and often stay at zero or below for several successive days.

Pressures that are carried vary. Some systems are laid out for 30 pounds per square inch while others go up to three times that amount. It is largely a matter of economics. Higher pressures mean an increased operating cost, but they substantially reduce the required size of equipment. Higher pressures are also more adaptable to local pressure storage systems and may mean considerable saving for long systems.

Some systems reduce the transmission pressure to a lower distribution pressure under five pounds by means of district governors. This makes a division between the transmission and distribution, and has certain advantages for the latter. It leaves less work for the house governors and eliminates the hazard of having a lot of pipe containing gas under high pressure in more congested districts. Of course, where a low pressure system has been in and is adequate, this form of distribution is usually continued.

Pressure Storage

Some companies have high pressure storage systems along their lines while others do not make any provision for storage except at a few cities where low pressure holders have been already installed. Pressure storage tanks are of various sizes and shapes, spherical, cylindrical with hemispherical ends, or ordinary cylindrical tanks; either may be welded or riveted. The purpose of local storage is to improve the load factor of the transmission mains, and to prevent interruptions of service. Usually the line has in itself sufficient capacity to supply gas for periods during off-peak hours. A mile of six inch pipe has a volume of about a thousand cubic feet and under 90 pounds pressure this will hold about six times that volume of gas. This storage has been very convenient at times when it was necessary to work on the lines.

Occasionally it is necessary to provide re-pumping stations in connection with the storage stations. These are used to boost gas along the transmission line or they are used to compress gas into storage tanks when there is insufficient pressure in the transmission main to utilize the full capacity of the tanks. In the latter case the compressor equipment is provided with devices to prevent its operation when the pressure in the transmission main is below a safe minimum.

The compressors are practically all of the so-called feather valve type. Some are single stage, some are double stage with intercoolers. The latter gives better efficiency for higher pressures, but also furnishes a difficult lubrication problem unless the condensed light oils are completely removed in the intercooler. After-cooling has one advantage in that it removes considerable condensate from the gas that would otherwise be carried out into the main. It seems to be the general practice to install after-coolers, as it is very difficult to remove entrained drip once it gets into the rapidly moving stream of gas in the transmission main, and there is considerable expense involved in blowing drips which are located several miles out in the country.

When it is considered that a plant of about six million cubic feet daily capacity can make gas for about half the cost which would be obtained in a plant of one million, and can make gas for about one-third the cost in a plant of a hundred thousand per day, it is obvious that there may be economies in piping gas from a large community to other markets. There may be further considerations that raw materials are cheaper and the market for residuals better in this locality. The more territory that a system envelopes the better will be the load factor on that system. Rural territory has a larger demand in the summer while the opposite is true of the larger cities. House heating in rural territory may reach sufficient proportions to change all this, but for the present, at least, the canning season is the peak time of the rural gas consumer.

Cost of Laying Mains

The cost of laying transmission main varies considerably but an approximate average figure for Wisconsin is as follows:

3 inch	$ .65	per	foot	or	$ 3,500	per	mile
4 inch	$1.00	"	"	"	$ 5,000	"	"
6 inch	$1.50	"	"	"	$ 8,000	"	"
8 inch	$2.25	"	"	"	$12,000	"	"

Local high pressure distribution systems run about 25% higher than this figure for main alone.

It is interesting to compare these costs with those for electric transmission lines. A city of about 20,000 population would require an electric line to feed it which would cost about $3300 per mile. This price would come very near providing the same city with a three inch gas transmission main which would be sufficient, if local storage were provided. An increase in distance would require an increase in pressure and if the distance were very great a larger main would have to be provided. Gas lines are more limited than are electric, insofar that the limit on the maximum allowable pressure for manufactured gas is proportionally lower than the limit on the maximum voltage.

The question that comes next is that of service. For some time there was a great amount of apprehension about continuity of service and loss in heating value. We have made a considerable study of the systems in Wisconsin, but have found nothing that would be of any consequence in criticizing this method of distribution.

So far as we know there have been two interruptions which were due more to human failure than they were to a failure of the method of distribution. One case occurred when a town was out of gas for several hours because someone had a grudge against the company and turned off a sectionalizing valve on the high pressure

line. The other case occurred when an employee of the company failed to report a frozen drip which resulted finally in the main freezing and the employee losing his job.

Factors Affecting Pressure

Good pressure service is dependent on sufficient storage and main capacity and on the proper operation of house governors. The former is a vital consideration in any distribution system, but when high pressures are used, the system is so much more flexible that unusual load conditions can be taken care of comparatively easily. The house governors have given some trouble and we have found it necessary to require a certain amount of routine checking and repairing of these governors. It is believed that the competition among the manufacturers of governors will bring forth many improvements in design within the next few years that will make them more dependable.

Heating valve losses are important, if they are of any magnitude, but we have found that they are not very great after a line has been in operation for any length of time. When a line is first cut in the loss is great. We have observed a loss of more than ten per cent in a line of about twelve miles that was cut in during the winter. Within two months the loss was reduced to less than two per cent and now the average loss is negligible. In some cases where water gas was a large constituent it has been necessary to carry a little higher superheater temperature, but the chances are very good that in such cases the distant consumers on the low pressure system were not receiving the full heating value either.

There is undoubtedly a small loss in heating value. Drip oil is removed from the system and this has a heating value that was credited to the gas when that gas was tested with a calorimeter. The heating value of all the drip removed, however, is a small portion of the total heating value of all the gas that is sent thru the mains. It would seem that this small loss in heating value should be charged as a part of the cost of receiving service by this method and it is not likely that anyone would consider this cost excessive.

Advantages of Lack of Tar and Water

An advantage which perhaps outweighs the disadvantage of heating value loss is that which results from the cleaning and drying action on the gas of compression and condensation. High pressure gas is in itself free from tarry particles and from a large portion of condensible water. This results in less trouble to the consumer and in better accuracy of meters. We have found for a given company, that the average accuracy of the gas meters is a function of the distance of the meters' location from the plant. We have heard reports of where this dessication was somewhat of a disadvantage in that trouble came from dust forming in the mains of old low pressure systems because there was no drip to keep it melted down. In such cases this has been overcome by the simple expedient of spraying small quantities of gas oil into the gas at the outlet of the holder.

No mention has been made of loss of gas, because this has been found to be very small. In spite of the increased pressure and larger amount of pipe the losses have not been greater than if the different communities were each served by local plants with good low pressure distribution systems. Careful welding and testing of joints has forestalled any trouble from excessive losses.

Testing Meters

In a paper read at the recent A. G. A. Natural Gas Convention E. A. Clark, Oklahoma Natural Gas Corporation brought out the following meter testing procedure.

The domestic meter is a very accurate measuring device, but it is mechanical and of course will wear out in time the same as larger capacity meters. Finding out where a meter wears and how long it will take various meters to wear sufficiently to stop and also how much gas they will pass before they stop would be a help to the Distribution Engineer.

One company connected various meters to a welded header. Between the header and meters a regulator and limiting critical flow orifices were placed of such size to deliver gas to the meters in quantities of approximately 70 to 75% of the capacity of the meters. A pressure in excess of fifteen pounds was carried on the header. Outlets for the gas were welded to another header and the gas passed from this header into the low pressure distribution system avoiding the loss of any gas. All orifices being of uniform size and having the same inlet pressure will deliver the same amount of gas to each meter. The meters will be read and tested periodically and curves made of their performances; the test being carried on until all meters are D. R. This is an accelerated test but if several companies try the experiment, no doubt considerable good can be derived from comparing results.

Gas-Engine Driven Compressor

The gas engine has for twenty years been practically the only type of prime mover used for field and main-line booster plants in the natural gas-industry.

The four-cycle type of engine has pre-empted this field because of the superior operating economy, greater reliability, and durability. This is simply a matter of compressor-station record and in the eastern natural-gas fields where such compressors were first used, practically all of the original plants are still in operation after twenty or twenty-five years of almost continuous service. The four-cycle engine has also been found to be better adapted to distribution-plant or holder-station work because of its greater permissible speed variation. This is true because in the four-cycle engine the cycles are definitely and uniformly controlled by a positively operated valve gear and governor.

Standard engines of this type are now on the market ranging in size from 50 to 200 horsepower with single-acting power cylinders, and from 200 to 1000 horsepower with double-acting cylinders. The direct connection of the compressor cylinder to the frame and reciprocating parts of the engine has also become standard practice, eliminating the costly and inefficient belt drive. The adoption of the simpler and more efficient plate valve in compressors has become general and permits higher operating speeds than were allowable with the old style of Corliss-poppet valve combinations.

—Comment of J. W. Reed before Pacific Coast Gas Association.

A Method For Recording the Effectiveness of Pipe Coatings

By S. H. Graf

Director of Engineering Research, Oregon State College

IN comparing the effectiveness of various protective coatings for underground pipe it is frequently desirable to make a graphical record of the protected and corroded areas. The ordinary method of photographing the pipe samples is not very satisfactory since it does not give a development of the cylindrical surface on which the protected and unprotected areas can be measured. Mr. K. H. Logan who is in charge of the soil corrosion work at the U. S. Bureau of Standards has developed a special camera in which the pipe is rotated and the film synchronously moved during the exposure so that a development of the pipe surface is produced. However, this is quite a complicated machine and is not generally available to workers on corrosion. It is the purpose of this article to describe a simple, although a somewhat laborious method of arriving at the same result. It is particularly well adapted to a study of the adhesion or effectiveness of simple bituminous dip coatings, but may of course be applied to galvanizing or other coatings.

Outline of Method

The first step in the method is to thoroughly wash the sample in luke warm water using a bristle brush to remove adhering soil and corrosion products. After this is accomplished the corroded areas are painted by means of a small brush with any suitable white quick drying paint. Figure 1 shows the appearance of some samples of 1½" pipe at this stage.

The second step is to surround the pipe with a sheet of tracing paper cut to fit and held in place by rubber bands. The white painted areas and the black areas of remaining coating then show through clearly and a tracing of either area may be made on the paper by the use of a camels hair brush and India ink. Figure 2 shows such a tracing of the sample at the right hand edge of Figure 1. By means of a planimeter the areas may now be measured and the amount of area lost or the remaining coating may be expressed as a percentage of the total. If samples of various ages are taken a comparison may then be made of the rate of deterioration with time or under various conditions.

If a permanent record is desired the tracings themselves may of course be preserved or may be duplicated by blue printing to provide as many copies as may be required. After the samples have been traced the coating as well as the paint may be removed by washing with benzol and pickling in any of the customary cleaning solutions. The pipe will then be ready for further examination on the nature or extent of the corrosion. This would commonly include the measurement of pits.

The particular study in which this method was developed and used was for the purpose of determining the effectiveness of a simple bituminous coating used on steel pipe in the distribution system of the Portland Gas and Coke Company of Portland, Oregon. The results indicated that such a coating is but a minor protection against corrosion and that even when most carefully applied the effectiveness is quite variable. The percentage of coating lost was found to be about 26 per cent in three years, about 40 per cent in five years, and about 60 per cent in seven years. Since the life of pipe is determined by the time required for corrosion pits to penetrate the pipe, protection must either be general over the area or it is of but little use. Of course from the standpoint of electrolysis even a partial protection because of increased contact resistance will be of some help in reducing the amount of stray current flowing, so that in some instances even this type of coating will have some value.

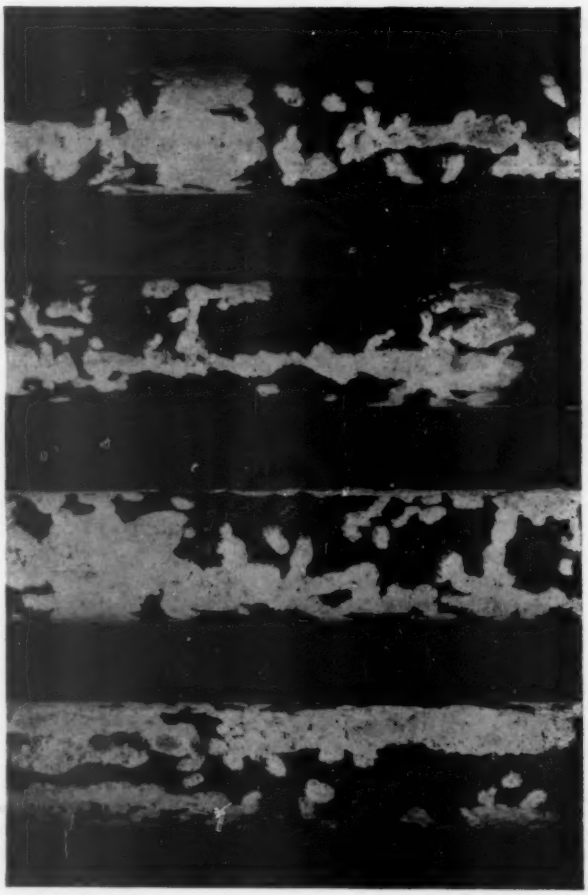


Fig. 1—Photo of pipe samples showing corroded areas painted white

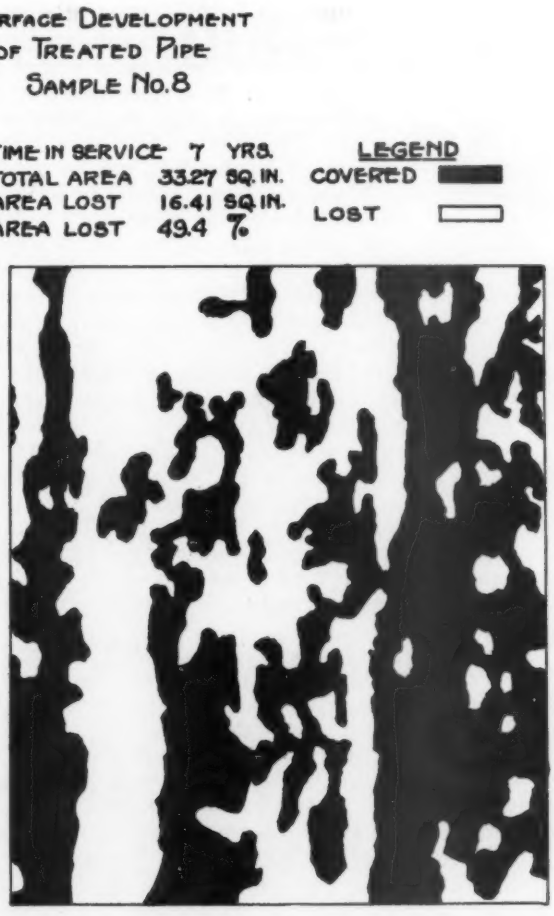


Fig. 2—Typical surface development on tracing paper

What Are the Best Methods of Covering or Coating Pipes to Prevent Corrosion

William Moeller, Jr.
Midway Gas Company, Los Angeles, California

In this abstract of a paper presented at the Kansas City Convention of the Natural Gas Department, American Gas Association, May, 1929, the Distribution Engineer will find much of value which will enable him to minimize corrosion and thereby lessen Distribution costs. The author's comments on the merits of the pipe wrapping material itself will doubtless be instrumental in setting many Distribution men straight in this connection.—Editor.

MATERIALS generally used as protective coatings for underground pipes are: (1) Coal Tar Products; (2) Refined and Natural Asphalts; (3) Grease; (4) Asphalt Emulsions.

No attempt will be made to discuss the relative merits of these various materials. A canvass of the gas and petroleum industry would, no doubt, indicate both good and poor results for all or any materials. Since it appears that coal tar or asphalt products are most generally used in the industry this discussion will be based on the application and use of these materials as protective covering for pipelines.

Assuming that these materials are satisfactory, the first essential is that the coating must adhere firmly to the pipe, that is, there must be a perfect bond between pipe and coating. Failure to secure a proper bond is responsible for most of the failures of the covering.

The suface of the pipe must be clean and dry. Methods commonly used for cleaning pipe are:

(1) Sand Blasting
(2) Acid Pickling or Commercial Caustic Treatment
(3) Mechanical means, such as Machine or Hand Brushing and hammering, or a combination of same.

The sand blasting method is now being used quite successfully, and produces a surface which is clean, dry and slightly rough;—a condition most favorable to secure the proper bond between the steel and the coating. This method is highly recommended and can be readily used at a central cleaning plant, but may be limited in field use until more suitable equipment is available.

The acid pickling, or commercial caustic method, produces a very satisfactory surface but is applicable for use in a central treating plant and requires careful washing and subsequent drying. It is at present not adapted to field use.

Mechanical Cleaning Not Always Satisfactory

The use of mechanical means for cleaning pipe, either hand or machine operated, as now generally used in field practice, does not, as a rule, produce the most satisfactory surface. The principal fault is that the surface is not always clean and the tendency is to polish the surface, both conditions being unfavorable to the proper bonding of the coating to the pipe.

The practice of applying an oil protective coating to the pipe at the pipe mills, prior to the shipment of the pipe, is not recommended because, unless completely removed, it produces a surface that is most unfavorable to the securing of a proper bond between steel and subsequent coating to be applied. The better practice is to thoroughly clean the pipe at the mill, either by sand blasting or pickling, and to apply a priming coat of suitable material at the mill before the pipe is shipped. The nature of the priming coat to be so applied at the mill must necessarily be governed by the kind of material that will subsequently be used as the protective covering for the pipeline.

This method is recommended because it affords ideal conditions for doing the work. It permits the use of the best methods for cleaning and preparing the surface and for applying the priming coat. It also permits thorough inspection of the work.

A satisfactory coating or covering is one which will not be destroyed by the various elements which cause the corrosion or destruction of iron pipe underground, or which may be present in the soil. If such a coating could be applied to pipe with assurance that it would bond effectively and remain permanently on the pipe, and form an impervious covering, the job would be considered ideal.

So far as bonding or adhesion properties are concerned, this depends to a large extent on the careful preparation of the pipe surface. Whether or not a coating is impervious when applied depends largely on the inherent qualities of the material used and to some

extent on the method of application. It is assumed that no coal tar or asphalt product such as is now generally used for this purpose is absolutely impervious, and to secure the greatest degree of imperviousness, the thickness of the covering is built up, generally by applying several coatings, one on the other.

Applying Priming Coat

After the pipe surface is properly cleaned, the initial coating should be the so-called "priming coat," which is usually applied cold. It serves to secure a good bond with the pipe and the greatest care should be exercised in its application. The consistency of the material used for the priming coat is such as to permit the application of a thin coat, and several methods are used, the most common and perhaps the best being by use of hand brushes. Brushing permits of the thorough application of a uniform coating.

So-called air brushes are also effectively used, but care should be exercised to assure that moisture is removed from the air, and that the coating is uniformly applied.

It is of great importance that the priming coat be allowed to thoroughly dry before the application of any subsequent coating.

These subsequent coatings may be applied either cold or it may be necessary to heat them to render them sufficintly liquid, depending upon the nature of the material used. All other things being equal, the cold application is preferable because it can be applied more conveniently, because it reduces the fire hazard during construction, because there is no possibility of destroying or changing the nature of the material due to overheating, and because we can be more certain of the final results.

One objection to the use of cold paint is that it necessarily contains a solvent which must evaporate after application in order that the coating may set. In so doing, the coating is left porous. Another is, that it takes longer to dry.

On the other hand, the application of a hot paint on a cold surface has a tendency to destroy the bond, and in ordinary field practice no attempt is made to heat the pipe prior to the application of the hot paint.

While there is considerable difference of opinion as to the relative merits of hot and cold application, I am favorable to the use of materials that can be applied cold.

Where ordinary protection is desired, that is, where soil conditions are known to be not severe, a covering consisting of a priming coat and one additional heavier coat is usually satisfactory.

Where soil conditions are known to be bad, and the greatest degree of protection is desired, a covering consisting of a priming coat with several additional heavier coats reinforced by wrapping between coats or over the final coat may be necessary.

When more than one coat is applied, it is necessary to allow each coat to dry before the next coat is applied.

Function of Wrapping Material

I do not believe that any wrapping material such as is now used has any material value within itself as a protective against corrosion. The primary object of the wrapping is to reinforce the coating and to afford added protection to the coating against abrasion or other injury.

The wrapping material should be thoroughly saturated so as to prevent further absorption. The type of wrapping material generally used is a saturated felt or a saturated fabric. I prefer the loosely woven saturated fabric,—approximately 20 inch—because it is less apt to form air pockets because it presents a better surface for bonding between coats, and because it can be more readily applied by hand. The use of a loosely woven saturated fabric wrapper is less apt to permit sagging of the coating under the wrapper.

Obviously, any applied covering cannot be expected to give perfect results if the covering is not maintained permanently intact, and for this reason it is desirable to apply the final coating after the pipeline construction has been completed to the extent that the pipeline is ready to be lowered into the trench, in order to avoid injury to the protective covering as much as possible during construction.

With the use of coal tar or asphalt products, it is necessary to apply a so-called "wrapped job" in order to secure the greatest degree of protection. A wrapped job can be better applied by machine than by hand, and for this reason it may not always be practical nor economical to apply the wrapped job in the field after the line is laid on skids and ready to be lowered into the trench.

I am not in favor of applying a finished wrapped protective covering on individual joints of pipe at the pipe mill because of possible injury to the covering in transportation to the job.

Until suitable machines are available for wrapping pipe in the field along the pipeline, it may be desirable and advantageous to establish central field plants near the construction, where machine wrapping can be done, rather than resort to hand wrapping along the line.

A Pointer for Salesmen Who Sell With Their Brains

In an interesting booklet, "The Sky's The Limit," which should be read by every gas man, Henry Obermeyer of the Consolidated Gas Company of New York discusses the smoke and soot nuisance and brings out the following economic aspects of the matter.

"We realize that the present cost of manufacturing and distributing gas still limits its application for many purposes, although in most of them the cleanliness, efficiency and convenience of gas fuel tend to outweigh its basic cost. With respect to smoke, the economic balance is well in favor of gas. For example, the annual gas bill for the average family in Chicago is thirty dollars. Going back to our figure representing per capita cost of the smoke nuisance at seventeen dollars a year, over sixty-five dollars a year. The smoke nuisance, the prorated annual cost to each family in Chicago is therefore, costing Chicago families on an average more than twice what they pay for gas.

"If the damage done by smoke were debited to the account of coal, and paid for by the coal user, the price of coal per ton would be nearly five dollars higher than it is.

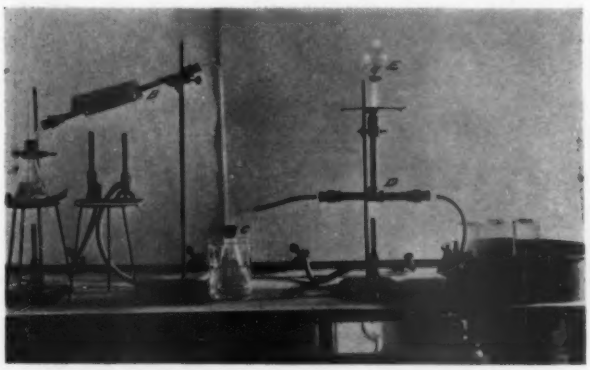
"Gas prevents smoke not only in heating, but also in incineration of garbage and waste, since we have it on the authority of former Health Commissioner Harris of New York that smoke prevention could never be successfully accomplished until such a program includes a ban on the burning of litter or refuse in apartment house or factory furnaces, which were not designed for such purpose."

Building Better Gas Men

How Brooklyn Polytechnic Institute Enables Gas Company Employees to Shoulder Greater Responsibilities

By Henry M. Riley
Editor, American Gas Journal

A NUMBER of gas companies have wisely sensed that they have within their ranks employees capable of being ultimately developed into key men and executives. Further, they have realized that such development can be accelerated through the medium of the ambitious employees pursuing prescribed courses of study during their off-time hours. To this end they have cooperated with their local schools and colleges, with the result that the latter have instituted night courses which train the employees in a highly concentrated but, at the same time, very practical manner.



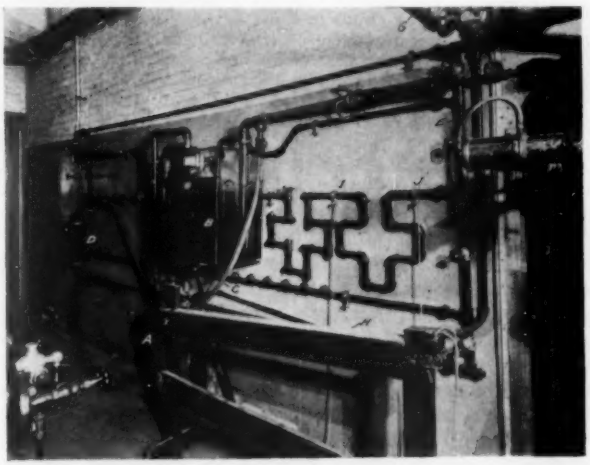
The Preparation and Properties of Water Gas
In this experiment the water gas is prepared by passing steam through highly heated coke.
Steam is generated in the flask A and passed over the heated coke which is packed in the iron pipe B. The gas generated is then passed through the condensing flask C where any water vapor is condensed out. The gas then passes through the iron tee D where it is enriched with benzol from the dropping funnel E. The carburetted water gas is then collected in the wide-mouthed bottles shown on the right. Gases generated and enriched under different conditions may be obtained and their properties studied and compared

Typical of such courses is the one in the Elements of Gas Engineering offered by Brooklyn Polytechnic Institute under the sponsorship of the Brooklyn Union and New York Consolidated Gas companies.

Any properly accredited employee may take this course during his evening hours and at the end of the year, provided he has reciprocated his company's offer by way of attaining the proper grades in his studies, he can feel reasonably assured that he has been built, so to speak, into a better gas man.

Before proceeding with a description of the logical manner in which the Elements of Gas Engineering is planned and motivated at Brooklyn Polytechnic Institute it would be of more than passing interest to name some of the positions held by men taking the course. These include the following: Clerk, Meter Repairer, Assistant to Works Superintendent, Street Department Inspector, Appliance Inspector, Salesman, Draftsman, Works Chemist, Gas Fitter, Holderman, Meter Reader, Order Clerk, Claim Department Secretary, Pumpman, Chauffeur, Machinist, By-Product Operator, Service Engineer, Assistant to Engineer of Utilization Department, and Air Compressor Operator.

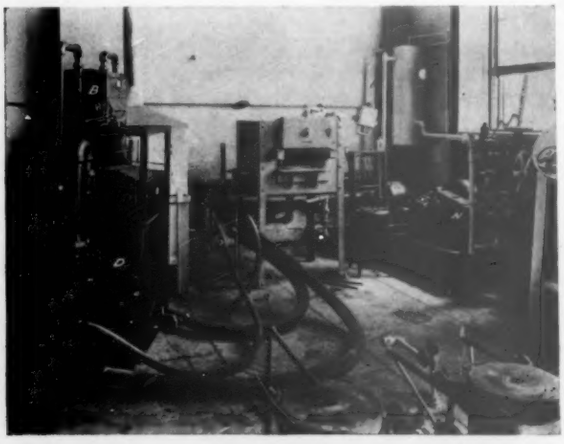
There is something that savors almost of romance in considering the above listing of occupations which just about runs the gamut of gas company jobs. And at the least, it voices, in no unmistakable terms, a hearty interest on the part of the gas company and a dogged desire to get ahead on the part of the employee. Best of all, it assures the higher executives that their company's future affairs and problems will be adequately taken care of. Later, it will be shown how a bill clerk specifically handled a portion of his work incident to the course.



Resistance to Flow of Gas
Gas from the mains enters through the valve A, passes through meter B and through rubber hose C to the vertical header D at the left. From this header gas can be supplied to any one of the horizontal lines of fittings, eventually reaching the vertical header E and passing to a gas burner G. The multiplying gage H is connected by a rubber tubing to points I and J, indicating a drop in pressure in inches of water. The pipe between points I and J includes 12 elbows and 11 nipples, whence, allowing for the drop in a straight pipe, the resistance per elbow may be estimated. Other groups of fittings which can be similarly tested include tees, 45° elbows, couplings, cocks, gate valves and globe valves. The top most and lowest lines can be used to compare the resistance of ¾ inches and 1 inch straight pipe.

The course, which was originated by Mr. C. E. Paige, Vice-President, Brooklyn Union Gas Co., is open only to those who have graduated from high school or to

those who have had the equivalent of good high school courses in Physics, Chemistry and Mathematics, and consists of a series of twenty-six lectures, five works inspection trips and twenty laboratory sessions dealing with the principles underlying the manufacture, distribution and utilization of manufactured gas, and with their applications. (The various illustrations accompanying this article explain in some detail the experimental work done by the students.)



Testing Heat Treating Furnace

Gas from the city main is supplied through flexible tubing A, to meter B, and thence to the furnace through hose C. Air is supplied from the pressure main through similar flexible tubing to the large meter D and thence to the furnace. The air-gas ratio is measured by the meters and checked by the Orsat analysis of the flue gases. This test also provides a means for studying the functioning of the automatic proportioning device with which the furnace is equipped under different conditions of operation. This furnace may also be supplied with high pressure gas through piping M from the gas compressor N.

After a brief review of the past history of the industry, the lectures proceed to a consideration of the general physical law of gases and the chemical processes of combustion and gas making; these studies are amplified by experimental work done during the laboratory sessions. Gas manufacturing processes are then to be taken up in detail, including a study of raw fuels used, equipment required, methods of operation, properties of the products made by the different processes, the purification system used, the by-products obtained, and the chemical methods of controlling quality.

Distribution systems are next studied, covering the portion of the industry devoted to delivering the gas from the works to the consumer, and including holders, compressors, boosters, mains, valves, services, governors, meters, and pressure survey and control.

Combustion processes then receive more detailed attention, also methods of measuring heat and temperature, both leading to a study of the principles governing efficient combustion in gas fired apparatus. Actual systems of supplying air and gas for combustion are studied, followed by furnace design, construction and performance, refractories and insulators, heat transfer, and furnace efficiency.

Consideration of the economics of fuel utilization in general lead to a discussion of the economic characteristics of the various methods of producing heat. Industrial heat treatment processes, metallurgical and otherwise, and the use of gas in the home are given attention, also laboratory tests of the efficiency and safety of gas burning appliances.

Three concluding lectures deal with general topics of importance in the gas industry including accounting, future trends, and service relations with the public.

Laboratory Work Is Thorough

The twenty laboratory sessions which are planned with a view to exemplifying the more important of the general principles involved, aim to develop the student's originality in thinking. They are divided into four groups:

1. Physical Properties of Gases.
2. Chemical Properties and Preparation of Fuel Gases.
3. Compression, Flow and Measurement of Gases.
4. Utilization of Manufactured Gas.

The apparatus of the Physics, Chemistry, Heat Treatment, Forge Foundry and Mechanical Laboratories of the Polytechnic are available for this work. The class is divided into groups working on different evenings, and each group is divided into small squads so that every student receives individual attention from instructors.

General View of Heat Treating Laboratory

The furnaces in this room and also the forge and melting furnace in adjoining rooms are used for the laboratory work for the class in Gas Engineering. In another laboratory are located a gas fired boiler and an Electrolux refrigerating unit arranged for testing.

It will be of interest to cite the work of a bill clerk by way of reproducing a sheet from his Laboratory Report on the Rate of Heating Materials. Obviously, this man has a fairly intelligent grasp of what he is doing. (See page 37.)

Tests Are Not "Sugar Coated"

In addition to the lectures, inspection trips and laboratory work, the men are given problems to work at home and written at stated intervals. Below is given in full one of these tests whose make-up demonstrates that they are by no means "sugar coated."

Answer all of the nine questions. It is important to adjust the length of your answer in accordance with the limited time of one hour allowed for the test.

1. How many cu. ft. of (a) oxygen and of (b) air are theoretically required to burn 50 cu. ft. of carbon monoxide?

2. What is the purpose of premixing air with gas by means of pressure blowers or injection with high pressure gas?

3. What are the necessary domestic gas appliances in a modern home?

4. State the essential difference between internally and externally heated gas appliances.

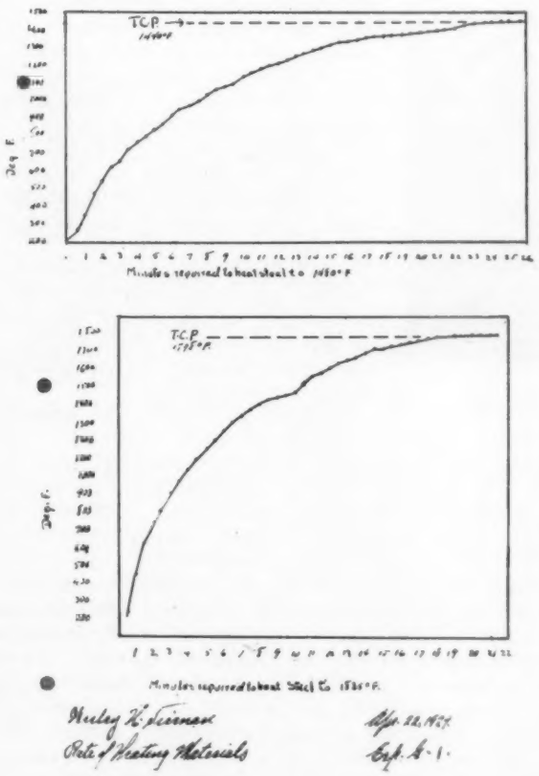
5. (a) What should be the properties of a good refractory for furnace construction?
(b) What are the desirable properties of a good insulating material?

6. Describe the two methods of heating industrial ovens and state the advantages and disadvantages of each.

7. What items enter into the cost of fuel before it is placed in the storage bin in an industrial plant?

8. A plant pays $4.00 per ton for the coal which it burns in its smelting furnace. What other cost items must be added to arrive at the total cost of this fuel as applied in the smelting furnace of the plant?

9. In considering "Future Trend in the Gas Industry":—
(a) Define "The Gas Company's Field".
(b) State the way in which the problem of gas manufacture is more evolved than the problem of electric current production.
(c) State the considerations which determine the proper size of pipes in a distribution system, from the standpoint of costs.



Hurley K. Freeman
Dept. of Heating Materials

Sept. 22, 1928
Exp. A-1.

In this study of the heat treatment of steel the student came to the following conclusions: "From the appended charts it will be noted that specimen No. 1 was to be heated to 1475 deg. F. We held 1480. We noted that the time required to raise was 26 minutes and that it followed the general rule cited in the early part of the work and that a Thermal Critical Temperature is around 1440 deg. F instead of 1290 to 1295.

"Specimen No. 2 was placed in a furnace heated to 1835 deg. F and due to the increase of temperature more heat was radiated, the result being that it took 21½ minutes to bring the latter up to furnace temperature. The Thermal Critical Point was found to be 1798 deg. F.

"The great reason for the difference in Critical Points, to my mind is that the specimens have lost their identity due to much heating and quenching, making it impossible to determine a T. C. P. in such cases."

The basis for grading the work of the students is as follows: a weight of 20 for attendance, 20 for laboratory reports, 40 for tests and 20 for home problems.

Instruction in the course is given by members of Brooklyn Polytechnic Institute teaching staff, assisted by specialists chosen from the Brooklyn Union Gas Company, New York Consolidated Gas Company and American Gas Association, under the direction of Professor Edwin F. Church, Jr., Head of the Mechanical Engineering Department.

In certain instances, the nominal fee for the course which is deducted each week from the student's pay envelope is refunded by the gas company, provided a fixed scholastic grade is attained. Incidentally, during the two years the course has been in existence practically 85% of the fifty-odd students enrolled each year have passed. Where there have been failures the same are usually warranted by legitimate excuses.

In conclusion, the course in the Elements of Gas Engineering has been found eminently successful in that it is admittedly building better gas men who will increasingly occupy more important niches in their companies' scheme of affairs.

Dealing With Retired Employees Who Cannot Qualify for Pension

"A different situation arises," said Mr. George W. Vary of the Bethlehem Steel Company before the American Management Association on May 9th, "when employees who cannot qualify for a pension must be dismissed by a company for any of the following causes: consolidation, change in process, change in location of the industry, change in product, demand for efficiency, physical disability." After studying how numerous companies solved such problems, he summarized their methods of solution as follows:

A. Transfer: Long service employees are given the opportunity to transfer to other departments or plants of the company or the company uses its best efforts through contacts with other employers to facilitate the securing of employment for those dismissed.

B. Pension: Employees having age and service requirements, if conditions warrant, are sometimes placed on the pension roll immediately, or if they are less than the required age or service, they are granted reduced pensions on a pro rata basis.

C. Lay-off: After transfer and pension possibilities have been exhausted the final resort seems limited to some sort of dismissal wage payment, and methods adopted are as a rule either full or part pay for a stipulated period of time or cash payments in a lump sum usually based upon earnings and the length of service. Indications are that the trend is toward the lump sum payment.

The following policy was adopted with regard to the treatment of long service employees who were dismissed:

Employees who were able to qualify for pension under the Corporation's pension plan were pensioned. Employees 45 years of age or over who had 10 or more years of continuous service were granted one week's pay each year of service.

From the numerous cases he had studied, Mr. Vary drew the conclusion that there is a growing responsibility on the part of industry toward employees whose separation from the payroll is forced by reasons other than their own personal inefficiency.

Some Trends in Industry

By Alfred Kauffmann

President, Link-Belt Company

"ADVANCING waves of other people's progress sweep over the unchanging man and wash him out."

That statement, made by Mr. Kettering of the General Motors Corp. several years ago, is as true today as it was 35 years ago when as a boy he entered the shops of the General Electric Company at Schenectady, N. Y.

During those 35 years, four were spent in machine shops as an apprentice, three years as a student in engineering, and 28 years with the Link-Belt Company. With that as a background I hope with some degree of interest to tell you about Some Trends in Industry.

Alfred Kauffmann

But before we dwell on the present day situation, let's project ourselves back to the work day of 1894 and thereabouts, when we passed thru the check-in gate at seven in the morning and out again at six in the evening, with one-half hour for lunch.

Those were the days when the workman bought his own wooden wash pail, soap and towel, which he kept under his bench, and hauled out a few minutes before quitting time providing the foreman or Super. wasn't looking. If luck was with you, you got home by seven; if you missed your car, no telling when you reached home. There were compensations, however; if you were tired and needed a little nap, all you did was to set your planer, shaper or lathe to cut the air, and your buddy tipped you off when the boss's feet were heard. No piece work, bonus or permium. Some contract work in rare cases, but mostly a flat day rate and not so very much at that. Quality and high quality of employee production, at lowest possible unit cost, meant nothing to the average employee then. He knew little of the customer's side of the picture—seldom shared in any of the gains, consequently was interested only in putting in a day's work.

Of course, some of us boys made a little money on the side which helped swell our weekly pay. We carried lunches and beer to the men. A long pole in each hand held about 20 pails, so you can figure yourself what we made.

And in those early years we had every so often our nice little strikes because one or the other of us didn't want to do this or that, and as we all sympathized with each other, we quit, sulked, lost our pay, and finally came back, all because the fellow that hired us thought he was boss and we thought we were boss—when all the time neither of us was boss—but we hadn't learned yet that "the buying public is the boss of us all."

No matter what position we hold, workman, Foreman, Superintendent, Manager, President, or what not, let us fail to give or to make good products, then see how quickly we'll be called to account for our work by the buying public.

Of course, the waves of progress taught us that millions were wasted in unnecessary strikes—we also learned that many losses were due to neglect on the part of the manufacturers to give the same consideration and attention to the human element of their factory as they gave to their machinery. The employees learned also that the employer was their agent who found purchasers for the product of their labor. So between the two we learned that many years of labor were needed in order for the worker to recover his wasted savings, or for the manufacturer to replenish his loss.

Treat 'em rough, and tell 'em nothing was not very far from the true relationship between management and employees in manufacturing plants in the early days.

The underlying point of view was that a firm hand, together with a withholding of all except the most meager information about the business, was necessary in successfully handling factory men.

Today, just exactly the opposite views are held by executives whose function is the handling of employees. Men today want to know what it's all about. They are intelligent enough to comprehend the facts, and to use them constructively, and it's good business to give them the information.

Old customers are the backbone of any business. If we keep them satisfied with price and quality and delivery we will have less customer turnover. When these facts are brought home to employees, it will stimulate them to appreciate that their performance has a direct bearing upon the marketability of the product. Losses and wastes invariably are reduced by the arousal of interest. So I say again, consider the factory employees as part of the sales force, and tell them everything.

It hasn't been so long since we wiped out the white-collar complex—the false barriers between office and factory employees, which used to worry many executives. What was more galling than to have an office man walk thru the shop and look down on the man in overalls.

And when it came to sports, like baseball, golf, or any other games, can you picture a white-collar man and an overall man from the same Company playing on the same nine, or in the same foursome? But time has brought a democracy in manufacturing organizations which has changed all this.

It wasn't an overnight job. It has been a long time developing. It has grown so slowly that some of us

Address given before Sixth Annual Convention, National Assn. of Foremen, Indianapolis, June 8, 1929

little appreciate both its present extent and its possibilities for good in modern management.

So during all these years in which the waves of progress have swept on, and made a distinct evolution in Industry and Industrial Management, the unchanging man has always been washed out of the picture.

Index of Success

Modern business is organized in such large units today that in an ever-increasing number of cases, men who twenty-five or thirty years ago would have been in business for themselves, are today important factors in large corporations. Men with high qualifications devote their talents to Marketing, Production, Accounting, or some other phase of the Company's business, but irrespective of its many ramifications, the fundamental principles underlying business success, are few in number and simple in character. To start with, the object of being in business is to make profits, and the index of success is the ratio of the profits actually earned, to the real profit making possibilities of the business.

Having determined what these profit making possibilities are, the next step is to ascertain what the causes are, which contribute to failure to realize these potential profits.

We must find out to what extent this failure is due to manufacturing inefficiencies—to excessive sales costs —to short sighted or incorrect company policies—to defective accounting methods—to inefficient or inadequate advertising, or to still other conditions.

Bear this in mind—mergers of small companies into one large company provide no substitute for competent management. After they are set up and operating as a unit, their earnings, as in any other form of business, depend entirely on the sound judgment and foresight of the management.

But with big business and mergers, an entirely new condition was created. Industry instead of belonging to the privileged few, is passing into the hands of the many. Today there is an army of employee-owners in every large organization. Does not this put an added responsibility on the management? The passing of a dividend becomes a serious matter, if the action hits the pocketbooks of the workmen, foreman, superintendent and Company officers. Also workers who are now part owners of their companies are beginning to have a better understanding of the duties and difficulties of management.

Our Part in the Picture

Now what part do we play in this picture? Most of us in this room are interested in the manufacturing end. What proportion of the failure to get the best out of our plants can be pinned on us? We all know that an industrial plant is only a mass of junk unless some one is around to see that the bricks, mortar and machinery become tools of production. And that takes Human Beings.

There may be all kinds of trends in industry, mergers, consolidations, and what is sometimes called Vertical Trusts; or history may bring about the cutting up of the big units into small ones again, but what will always be needed will be men to do things. Men are not such certain quantities as money, materials and machinery. A machine will do a known quantity of work in a known time. A man will do such work as he is willing and capable of doing.

Men, then, are the most important factors in the conduct of any business. And what difference does it make whether we mention this before a gathering of foremen, salesmen or executives, when the cry is always the same. Forget the title tacked onto our names, and look at it from the big opportunity standpoint. Men grow by having responsibility laid upon them. You may be a foreman today, and a superintendent or manager tomorrow. The same applies to the workman under you. In a sense you are his manager. Encourage him, let him know that he has a chance to get ahead, and that his chance lies in himself, and you will get further than any scheme of profit sharing, bonus, or welfare work, though they all may be very helpful.

The chance to say "Yes" to the question "Am I getting on" is what appeals to most men.

You men here who are foremen—

Are you not the business managers of your department? Would you or could you do differently than you are now doing, if you were able to put your department in a separate building, on a different lot, and put a sign with your name over the door?

You were not picked because you had a pull. As business manager of your department you were chosen because you had certain definite qualifications. You were a good workman, a master craftsman. You understood the "know-how" of the business, and you know how to get along with people.

The Human Element

You know better than I do the many petty things that come up during the day or week, the burden of which must be borne by you. You know the most important factor is maintaining high quality and low cost Why tell you anything about the direct loss due to spoiled work, or that rush jobs are always more expensive than regular jobs?

You need new men in your shop. Either you, the foreman, or the employment man must hire them. Both of you are poor salesmen if you can't sell the job to the prospect, because, remember the man who asks for employment is a buyer of a job, and if you need him it is your business to sell him one.

Some of you may, but all of you should, know more about the practical knowledge of manufacturing economies and accounting—have a clear insight into such overhead items as equipment depreciations— tool cost— scrap charges—supply—costs—supervision and inspection charges, and the like—in their relation to direct charges and total costs.

But more important than all is a working knowledge of *human beings.*

Bear this in mind: Every man pays for the amount of bossing he requires, and likewise every man's wages increase in proportion to his ability to act as a boss or foreman of himself and others. The lower the wage rate, the greater the amount of watching and direction constantly required. The highest wages are paid to the man through whose ability the largest number of other men may be profitably employed.

I want to say this in conclusion:

Competitive industry today isn't a social or charitable affair—it is a conflict, and leadership is required to bring success.

It takes "guts" to stay in the game.

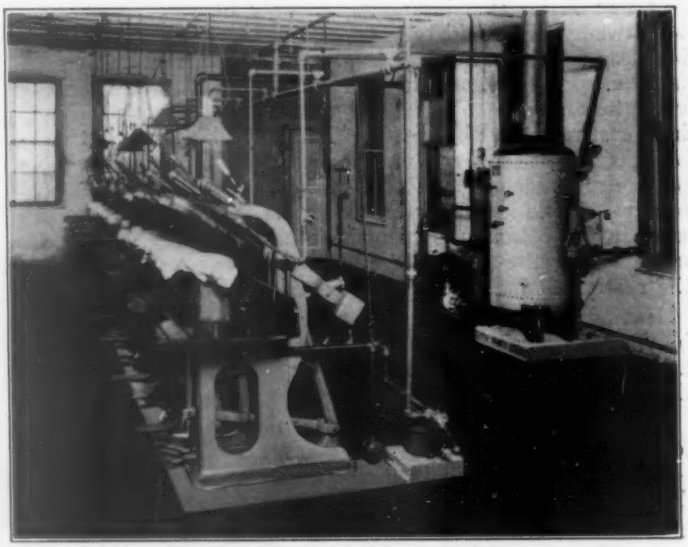
Some of us who handle men succeed only in proportion as we intelligently direct the work; that is, as we get intelligent work from the men who work with us.

So I repeat what I said at the beginning—the opportunity is here—if we don't take advantage of it, then the advancing waves of other people's progress will sweep over us and wash us out.

The Industrial Market for Small Gas Fired Boilers

By J. H. Bell

Vice-president, P. M. Lattner Manufacturing Company



Installation of 10 H. P. automatic fired boiler with condensation return system on same floor with garment presses

HOW many industrial gas sales departments are conscious of the vast potential market for the small gas fired automatic steam boiler; such a boiler as you ordinarily see in garment factories or in the smaller tailor shops; the boiler that is catalogued and sold by manufacturers of clothes pressing machines to such an extent that the average industrial gas man calls it "a pressing machine boiler" and lets it go at that.

Do you know that this type of boiler is used by over a hundred different and distinct industries in one city alone? In one small building in that city are thirty-nine gas fired boilers ranging in size from one horse power to fifteen horse power. The industries represented are small and varied but all are pulling gas out of the mains in very considerable quantities. Where to find this market is the problem and is the purpose of this article.

A Varied Field

In your search for gas load, does your gas equipment sales department solicit rubber stamp makers, perfumers and printers? Do they know that steam in small quantities is used by wholesale druggists, furriers, film companies, cosmeticians and chemists? That some live salesman can copy it down, let us go on further and list bath houses, bottling plants, creameries, fuel oil dealers, wholesale grocers, hatters, hatcheries, ice cream plants, ink makers, laundries, newspapers, packing companies of all kinds, paper box factories, preserve companies, pleaters, and even in this day and age, wineries.

Two of the gas boiler manufacturers have adapted their boiler to motor truck and motor bus cleaning units which are most efficient in stripping down a chassis preparatory to painting. Therefore, besides the motor truck dealers another good prospect is the paint shop. Many of these cleaning units are already in use and are most satisfactory.

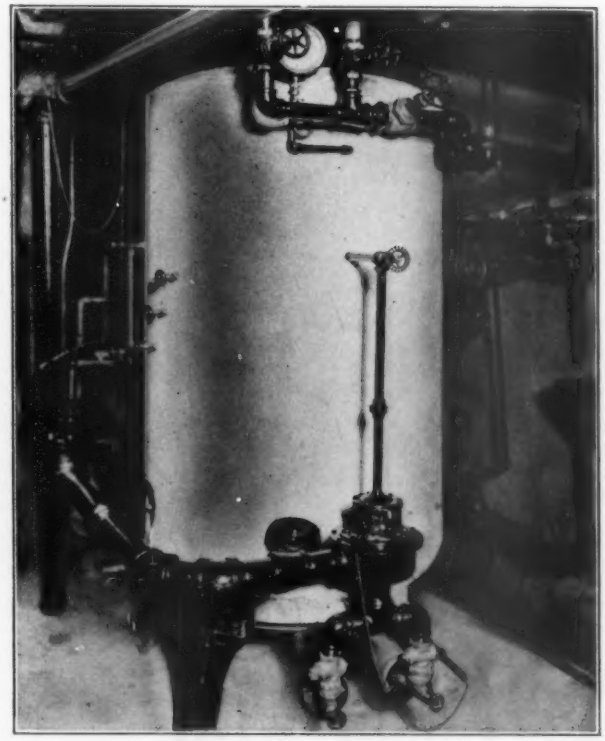
There is another angle to this small boiler sales business which is more frequently missed than hit. A manufacturer using steam, wishes to add additional equipment which requires a few more horse power. His present steam plant is up to capacity and will carry no additional load. A small gas fired boiler would solve the problem, but the manufacturer never heard of such an item, so he is forced to consider replacing the entire steam unit, or adding another coal fired boiler for which there may be no room. One of the big advantages to the small gas boiler is that it can be placed in any odd corner and on any floor where gas and water can be piped.

A specific case of the above is now present with regard to laundries who are, with hardly an exception, installing dry cleaning equipment. It has been estimated that twenty-five percent of them will require an addition to their steam plant. Will the coal fired men get all of it, except in those well nigh isolated localities where the industrial gas men are on the job? The writer is willing to make the prophecy that it will not even be close to fifty-fifty, and only due to lack of solicitation and education by industrial gas departments.

Large Prospects

Bakeries are continually expanding and require more steam. So are restaurants and hospitals. The latter most frequently prefer to operate their sterilizers and kitchen equipment with a separate steam boiler rather than from their heating plant. Architects specializing in institutional construction are a fertile field for the industrial gas sales man and are glad to recommend equipment if they only know about it.

Graineries use a small amount of steam for grain testing purposes. Candy factories and syrup makers operate their cooking kettles with high pressure steam,



25 H. P. gas fired boiler is installed in a candy factory in St. Louis and furnishes steam to the cooking kettles

and the smaller ones particularly like a boiler that can be placed on the same floor with the equipment. Tire vulcanizing shops need steam for their moulds and commonly a one horse power gas fired boiler is attached to each mould, although a two horse power boiler would handle two moulds just as satisfactorily.

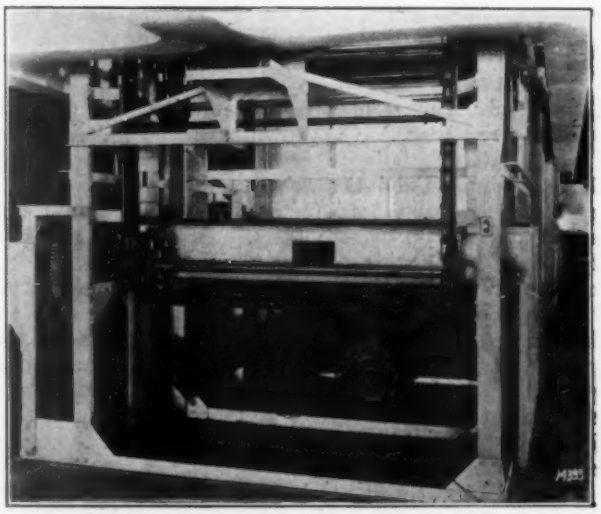
The manufacturer of high pressure gas fired boilers without doubt would like to have the gas companies market his product exclusively. It is the logical outlet for him, particularly from the installation and service view point, and it is only normal that a customer interested in gas burning equipment should approach the gas company first. However, with the manufacturer interested in the sale of his equipment and the live gas company interested in both equipment sales and increased gas load, it behooves both of them to work together in developing the vast potential market before mentioned.

Errors in Measuring Temperature of Flue Gases in Tests of Heating Boilers

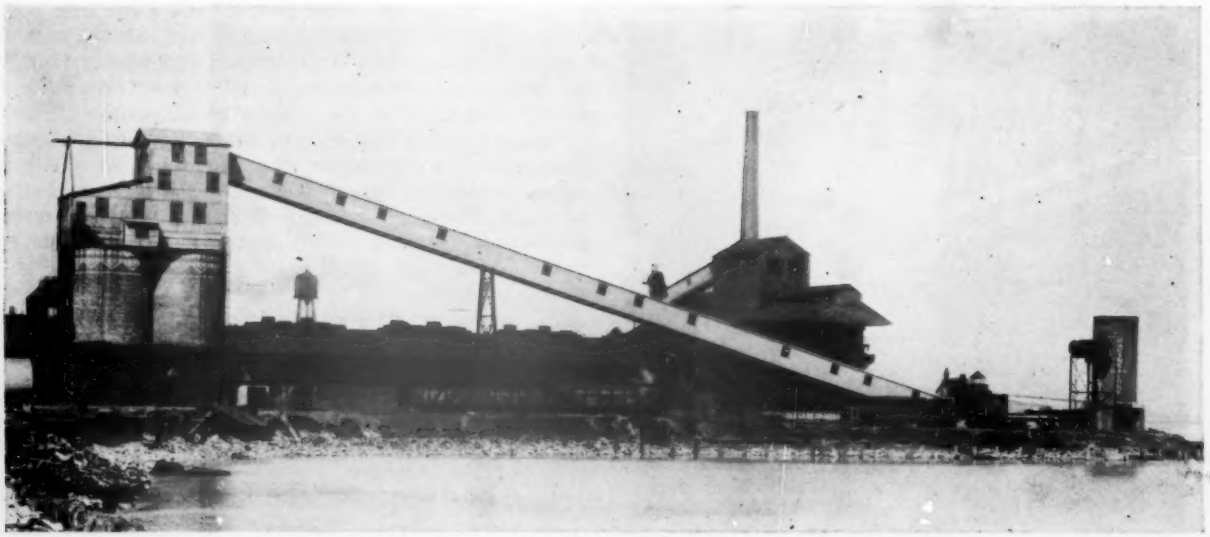
In tests of boilers the temperature of the gases as they leave the boiler is one of the factors which determines the loss of heat in the flue gases. The measurement of the temperature of such gases involves possibilities of error apart from the accuracy of the thermometer used or the instrument associated with it. The gases leaving the boiler may not be of uniform temperature over their cross section, and the thermometer will be exposed to the cooling effect of the surfaces of the boiler and flue pipe.

Any code for the testing of boilers should include instructions as to the methods to be used to ensure the necessary accuracy. Thermocouples are commonly employed because of their convenience and because the junction can be made small, thus reducing the error due to exposure to cooler surfaces. Some tests have recently been made at the Pittsburgh Experiment Station of the United States Bureau of Mines, Department of Commerce, to determine the magnitude of the error when the method specified by the Code for the Testing of Low Pressure Heating Boilers of the American Society of Heating and Ventilating Engineers is followed. The code calls for the outside of the flue to be insulated in order to reduce the loss of heat from the gases as they flow along it and to increase the temperature of the inside of the flue and thus reduce the loss of heat by radiation from the thermocouple. The thermocouple is specified to be placed with its junction at the center of the flue pipe and one of the unsettled questions was its best distance from the smoke-pipe collar of the boiler.

Tests were made of boilers having flues of 5, 10 and 30-inch diameters. Exposed thermocouples were placed at from 1 to 5 equivalent flue diameters from the collar; the true gas temperature at one position was measured by a shielded velocity couple. Tests were made with the flue gases at temperatures of from 400 to 1000 deg. Fahr. The results showed that the gases entering the flue are not well mixed and that the temperature at the center of the stream is high, but that fairly good mixing of the gases is obtained in a travel of 4 flue diameters. The difference between the true temperature of the gas stream at 3 to 4 flue diameters, and that registered by the exposed couple, averaged from about 5 degrees with 400 degrees gas temperature to 18 at 1000. These values are under 2 per cent of the difference between the normal temperature of the air entering the boiler and the flue gas temperature, that is, the temperature difference which would be used in computing the loss of sensible heat in the gases. This error is, however, partly offset by the fact that the average temperature of the cross section of the gas stream will be less than that measured at the center of the flue.



A High Capacity Gas-Fired Oven for Japanning Upholstery Springs



Coal-gas and Vertical Oven Plant, Racine, Wisconsin.
Left to right are city-gas holders, screened-coke storage bins with coke elevating equipment, horizontal-retort house (rear center), vertical-oven house, and coke-quenching tower.

Low Gas-Making Costs with Vertical-Chamber Oven

By S. B. Sherman

General Superintendent, Wisconsin Gas & Electric Co.
Racine, Wis.

This paper has been enlarged and revised from the paper given by Mr. Sherman at the Production Conference of A. G. A. in Baltimore, May 27. As so revised, the paper is a very valuable interpretation of the economic and engineering considerations which led to the installation of the extremely interesting vertical-chamber oven plant at Racine.—EDITOR.

GAS requirements of Racine and the surrounding territory have grown rapidly and steadily. Especially large increases in industrial-gas load have been obtained through sound sales engineering, giving a favorable load factor with only moderate seasonal changes. These facts, coupled with the long cold winters of this territory which provide an exceptionally good coke market, have given special advantages to coal gas rather than water gas. Hence when it became necessary recently to enlarge the gas-making capacity of the plant it seemed desirable to add coal-gas units. However, the horizontal benches, of which there were 50 in the plant, were in such small units that it was not desirable or economical to extend that type of construction further.

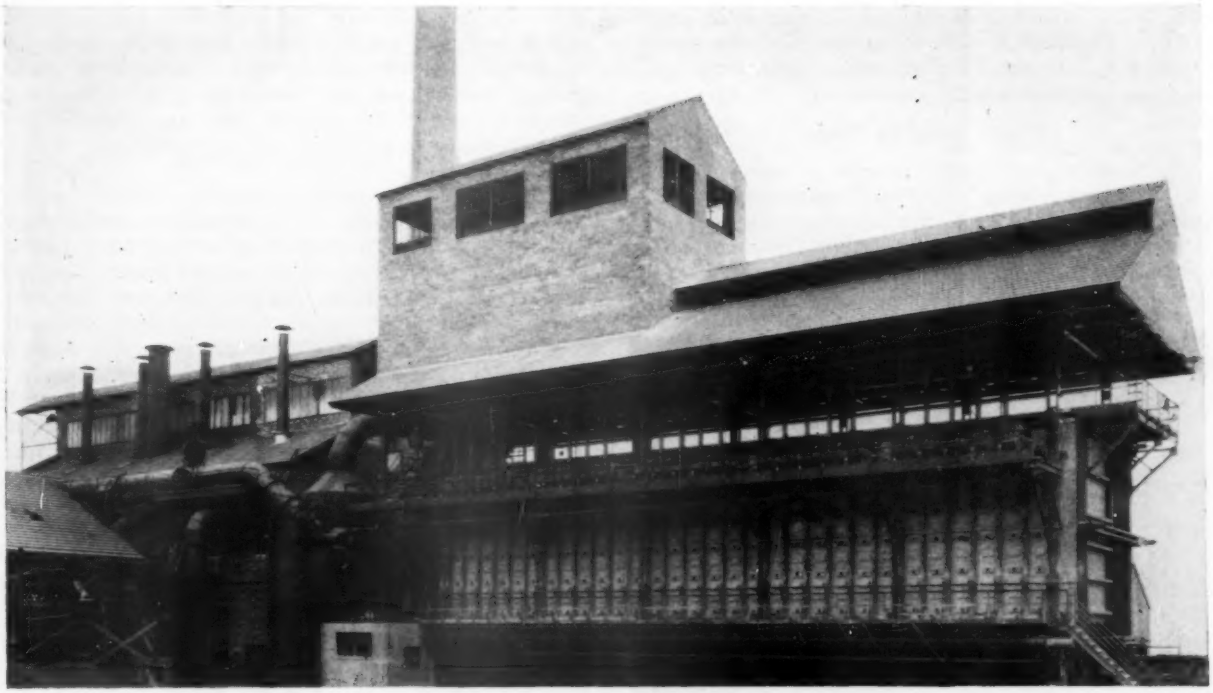
The problem seemed to be essentially the installation of some type of carbonizing plant that would:

1st—Harmonize with the present layout and machinery.

2nd—Produce a satisfactory coke for domestic and industrial use.

3rd—Produce the desired quality of gas with reasonable operating and investment costs.

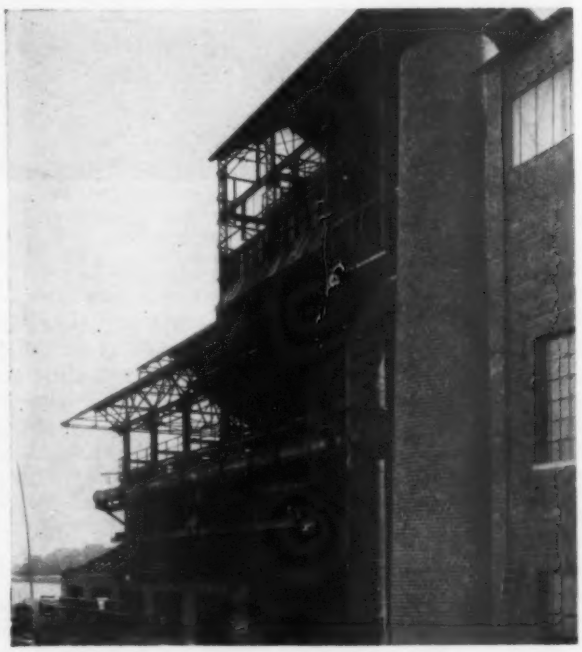
Refractory Construction
Beginning of oven brick work is shown with partially completed recuperators in rear and first courses of oven refractory shapes in foreground.



Battery Elevation on Oven Side.

Small concrete structure (left foreground) houses tar and liquor pumps and water pump for operating hydraulic door mechanisms; rack and gears for lower door operation are visible along lower face of battery. Sight holes for temperature observation show on the face of the battery. Off-take pipes and foul-gas main are seen above. Coal bunkers are housed in the brick structure at the extreme top center.

After some investigation all but two types of carbonizing units were eliminated, these being horizontal ovens and intermittent vertical-chamber ovens. Either one of these plants, it was felt, would work in with our older plant and produce good coke. The vertical-chamber oven, in our opinion, met the third condition for our plant better than horizontal ovens.



Oven Plant During Construction.

The structural arrangement is shown here, including coal-bin housing (above), operating floor (middle), producer gas flue (center), and lean-to housing for waste-heat boiler (at the base).

Earlier Gas Equipment

Before describing the ovens selected and their operation, it is of interest to consider the earlier experience of the Racine plant as indicating further some of the reasons for the selection of vertical-chamber ovens and some of the factors which should be taken into account in any moderate-size plant confronted with the problem of adding to its gas-making facilities.

As a result of constant additions of horizontal benches in the old plant, labor conditions and costs had become serious and a means for correcting this situation had to be faced as early as 1920. Careful analysis of the situation showed that caring for 50 individual producers and for the 300 stand pipes of the horizontal plant caused practically all of the labor trouble. These two operations accounted for respectively 40 per cent and 25 per cent, or a total of 65 per cent, of the labor cost; and they probably accounted for fully 100 per cent of the trouble with labor, since the two jobs were hard hot work.

Substitution of Kerpeley machines to furnish hot producer gas for firing the benches reduced labor cost 32 per cent, reduced fuel cost materially, and eliminated a great share of the labor trouble. Later addition of scrubber stand pipes still further reduced labor cost 45 per cent of the original and eliminated the second principal source of bad working conditions. However, even these improvements, with the addition of waste-heat boilers and a water-gas machine, did not appear to give the lowest possible over-all gas-making cost. As indicated above, the addition of the vertical-chamber

oven plant, which was erected during 1928 by the U. G. I. Contracting Company, promised the greatest advantage. The results given below apparently justify fully the selection which was made.

Description of Ovens

The vertical oven plant consists of five benches of five ovens each, with a total coal through-put per day of approximately 200 tons. Each oven is approximately 22 feet high and tapers in horizontal section from 9 ft. 6 in. by 8 in. at the top to 10 ft. by 12 inches in section at the bottom.

View Under Ovens.

All oven doors are shown open. The tracks are for the hot-coke car which is moved by the cable driving machine visible in the background. The six-inch flanged pipe-line (lower right) supplied city gas for drying out and bringing the ovens up to heat; this line can be used for heating the ovens with city gas if desired.

The battery is equipped with a charging larry and a hot-coke car which conveys the coke to the quenching equipment and the screening station where it is prepared in the various domestic sizes. Heating of the battery is done by producer gas generated in detached Kerpeley producers. This gas comes from the producer at about 1000 degrees and it is somewhat further pre-heated in the recuperators before mixing with the pre-heated air for secondary combustion. The ovens themselves are built up of silica forms, but the recuperators are of fire-clay refractory.

There is an oven heating wall on each side of each oven made up of a series of horizontal passes so arranged with baffles and dampers that uniform heating from top to bottom can be arranged with no danger of concentration of heat at any part of the oven. Each heating wall is equipped with separate producer-gas and secondary-air adjustments, which make the control of temperature comparatively simple.

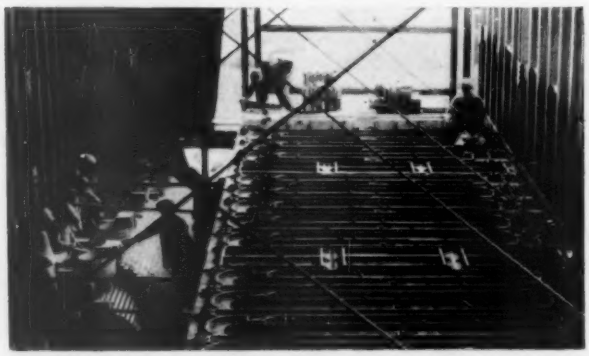
The temperature maintained in the heating flues for appropriate carbonization is approximately 2500° F. at the bottom and 1600° F. at the top. These temperatures are checked twice a day with a radiation pyrometer. This gives a uniform coking rate throughout and the charge is completely carbonized in all sections of the oven at the same time. Since the ovens are only 12 in. wide, the charge is completely carbonized in 12 hours.

Each oven is equipped with an individual off-take connection at the top only. There are individual seal pots and connections to the foul main, an arrangement which makes it easy to isolate any single oven. The waste-heat boiler is used to recover heat from the outgoing waste gases and furnishes practically enough steam for use in steaming the retorts.

Operating Method

The crushed coal for the retorts is stored in an overhead bin from which it can be easily discharged by gravity into the charging larry. This larry has two compartments, one for coal and the other for coke breeze. This breeze is charged first into the empty oven to form a layer about one foot thick on the bottom door to act as insulation to prevent the raw coal from lying on the door and failing to coke properly.

The routine operation of the oven-plant alone is handled by two men per shift, one larry man and one lower door man. There is a signal device by which the larry operator and the lower door man can communicate. When a charge is coked and ready to be dropped the larry man raises the seal on that particular oven and opens the top doors. He inspects the gas off-take to see that it is clear and that the spray is functioning properly. He then signals the lower door operator, who releases the eccentrics on the self-sealing bottom doors, which are hydraulically operated, and discharges the coke by gravity into the hot-coke car. This car is then sent to the quenching tower, being operated by means of a cable drag. The lower door is brushed off and closed and the oven is then ready for the next charge of coal.



Bottom Plates of Ovens During Construction.

Waste-gas collecting system under construction at left; steel bottom plates and oven door frames are seen in place ready to receive first refractory brick work.

One man is required on each shift for quenching and handling of the coke, including operation of the screening station. The fourth man on each shift acts in a supervisory capacity and does the odd jobs, including minor repairs around the oven plant. These four men take care of the entire coke plant, excluding coal handling and producer operation, which parts of the work are cared for by the force from the old retort and water-gas departments.

Steaming Practice

Since the straight coal gas produced in such a plant would have approximately 580 B.t.u. it was desirable to lower the average heating value by some cheap gas down to the Wisconsin State standard of 520 B.t.u. per cu. ft. It was desired at the same time to keep the specific gravity of the gas made as low as possible, in order that the final gas sent out from the

works would give the most satisfactory results at the lowest over-all cost. The use of blue gas with the oven gas seemed to meet the requirements best. Since this type of vertical-chamber oven has been very successfully steamed in European practice for many years, it was decided that this operating practice would be adopted.

Each oven is equipped with an individual steam-control valve which admits the steam at the base of the oven at three different points. It has been found that a small amount of steaming is required during the fifth hour to prevent a building up of gas pressure in the base of the oven due to the slightly expanding character of the coal mixture used. Further and more extensive steaming occurs during the later half of the carbonizing cycle for a period of approximately three hours. The average weight of steam used per charge is approximately 650 pounds, or approximately 150 pounds of steam per ton of coal used.

The use of steam has not only resulted in the production of a large yield of a satisfactory quality of gas of reasonable specific gravity; it has also the added advantage of keeping carbon deposits on the oven walls down to such a point that scurfing periods are very infrequent.

When operating on a 12-hour coking schedule the 25 ovens have a gas-making capacity of slightly over 3,000,000 cu. ft. of 520 B.t.u. gas per 24 hours. The coke quality and yield have been entirely satisfactory. Very little breeze is made. The coke has proven excellent for domestic use; it is very dense and can be handled with the minimum of breakage. The domestic range size weighs about 32 lbs. per cu. ft.

After seven months of operation it is believed that the ovens have afforded all of the advantages anticipated for them. The best evidence that they have proven thoroughly satisfactory is the fact that an additional plant of the same type of ovens is now being planned. Some of the more important and significant results from typical operation are given in the following table.

Operating Results for December, 1928 U.G.I. Vertical-Chamber Oven Plant, Racine, Wisconsin

Coal used	Mine-run Royal & Allison Mines, Valley Camp Coal Co.
Coal charged per oven, as charged	8494 lbs.
Coking time, gross	12 hours
Steam used per charge	654 lbs.
Steaming time per charge	3 hours
Dry producer fuel used per ton coal charged	329 lbs.*
Temperature of producer gas to ovens	950° F.
Gas made per day	3030 M
Heating value of gas	524 B.t.u.
Specific gravity of gas	0.46
Gas yield per pound of coal	7.67 cu. ft.
Heat in gas per pound of dry coal	4015 B.t.u.
Waste-heat steam made per ton of coal	614 lbs.
Gas made per man-hour of total plant labor	31,000 cu. ft.
Ditto following addition of second battery (estimated)	46,000 cu. ft.

**Producer fuel has since been reduced.*

Finding a Substitute for Gas-Oil as an Enricher in Manufacturing City Gas

In recent years numerous investigators throughout the world have given attention to the possibilities of producing hydrocarbon compounds from a gas which can be made readily from coal or coke, namely, from water gas, the Department of Commerce points out. It has been so completely demonstrated, on a laboratory scale, that these compounds can be thus synthesized that a brief study was made at the Pittsburgh Experiment Station of the United States Bureau of Mines of some of the important factors governing the development and utilization of such a process in conjunction with gas works operation. Some of the factors limiting the production of synthetic hydrocarbons for gas-enriching purposes have been discussed in Bureau of Mines Serial 2840.

Using catalysts thus far found to be suitable, it is necessary to clean the water gas to an unusually high state of purity because of the poisoning effect of sulphur compounds upon the catalyst; a process has not yet been developed for this purpose. Furthermore, the design of a reaction chamber satisfactory for large-scale operation is still a problem, largely because of the large amount of heat evolved during the process. Because of these and other similar conditions, the exact cost of enriching gas with synthetic hydrocarbons made at the gas works is not known. However, it is evident that even under very favorable conditions it will not become generally economical until gas oil is 9 to 10 cents a gallon, and perhaps not until it is very much higher than this. The whole matter of gas enrichment by the use of synthetic hydrocarbons produced at the gas works is now under consideration by committees of the American Gas Association.

Effect of Plastic Zone on Coke Oven Operation

Chymist in "The Manufacture of Domestic Coke in the Coke Oven," Gas World, London, draws the important conclusion that the temperature of the interior of the heating walls against the coke only rise very slowly and do not become higher than 900° C. so long as there is a plastic zone in the oven. As soon, however, as the plastic layer disappears, the rate of rise of temperature both in the walls and in the interior of the charge accelerates greatly. This explains, for instance, why an oven left in too long so readily becomes overheated even to the extent of damaging the brickwork. Bearing in mind the deleterious effect of overheating the coke, the conclusions to be drawn will be obvious because if the charge is pushed at the end of the eighteenth hour, when it is just ready, no portions of the coke have reached a temperature of 900° C. and the greater portion will be below 850° C. If, however, the heating is continued until the gas is nearly all driven off so that according to the old style of working the oven is "finished," the charge will remain in till the twentieth hour and will be subjected to temperatures between 920° and 980° C. If a charge be allowed to remain in the oven for an additional hour, the temperature will rise to 1,040° C.

The objection frequently heard to pushing the charge as soon as it is ready, is that the coke against the wall must in any case have become overheated, so that only the portion towards the center of the oven will be affected by this practice. This view is not correct, because the temperature at the wall does not rise to a serious degree until the plastic layer has disappeared.

For the same reason it is not necessary to use very narrow ovens to produce combustible coke.

TECHNICAL AND GENERAL MISCELLANY

ASSAY OF COAL FOR CARBONIZATION PURPOSES

The variation in the yields of coke, tar, liquor and gas with rate of heating, final temperature and weight of charge are tabulated. These details are obtained in experimenting with the Gray-King assay method. The standard conditions adopted are such as to give approximately the maximum tar yield obtainable from a coal by external heating. The assay method has proved of value in the classification of coals in the detailed examination of coal seams and as a standard for judging the tar-producing efficiency of any plant. Strongly swelling coals can be satisfactorily assayed if they are first mixed with a suitable proportion of powdered electrode carbon. The proportion necessary to produce a mixture which does not swell on carbonization gives a rough measure of the "caking power" of the coal. It is not easy to correlate the yields of gas from the assay with those from the retort, two corresponding gases differing markedly in composition. In order to obtain a larger quantity of tar for examination, an assay apparatus has been designed with a capacity of five hundred grams of coal. Details of both assay apparatus and notes on their manipulation are given.—*J. G. King and L. J. Edgcombe, Department of Scientific and Industrial Research, Fuel Research Technical Paper No. 21, 1929.*

THERMAL CHARACTERISTICS AND HEAT BALANCE OF AN OIL GAS GENERATOR

A five day test was carried out on a Jonés oil gas generator which worked on a cycle of ten minutes make. Oil and steam were injected during this period. Then followed a five minute blow with air to remove the carbon, and thereafter a five minute heating period wherein both air and oil were used simultaneously. The air was measured by means of a Venturi meter and checked by means of Pitot tubes. Oil was determined by means of a meter calibrated against storage records, and steam consumption was calculated from the moisture content of the waste gas and from boiler room records. Temperatures were measured with bare iron-constantan couples which were protected by a screen to reduce radiation. The original article contains a mass of operating data of which the principal points are given here.

The oil used was 56.7 gallons per cycle, the temperature of the waste gas 784 to 797 degrees C, temperature of made gas 800 degrees C, tar yield 2.5 pounds per 1000 cubic feet. Calculations are given for the gas made, the oil and steam used, waste gas produced and air required at different stages of the cycle, and heat balances are based on these figures.

The weight balance is divided into two periods and expressed in terms of elements and actual materials. It is shown that in the gas making period 48.69 pounds of oil and 38.12 pounds of steam produce 1000 cubic feet of gas, 13.58 pounds of lampblack and 24.62 pounds of condensed steam. In the heating and blowing period 7.25 pounds of oil and 198.95 pounds of air are required per 1000 cubic feet of gas. The heat balance for the complete cycle shows 95.13 per cent of input to be due to oil and 4.5 per cent to steam; 53 per cent is recovered in the purified gas, 18.5 per cent in lampblack and 3.28 per cent as tar. The greatest loss is in the sensible heat of the waste gases, which accounts for 7.53 per cent, while a total of 6.29 per cent has not been traced. The overall efficiency of the plant could be raised by using tar and lampblack as boiler fuel—*R. D. Pike and G. H. West, Industrial and Engineering Chemistry, 1929, volume 21, pages 104-9.*

CONTROLLING THERMAL VALUE OF GAS

The principle on which the instrument is built is simple and consists in evaluating the thermal power of the gas while a constant temperature is being maintained in a perfectly insulated medium, this being obtained by means of a thermostat inserted into this medium. The quantity of gas consumed by a burner in the lower part of this chamber varies according to the thermal power of the gas which is being fed to it.

The apparatus consists of a vertical glass tube A. The gas burner b is located at its lower part. The flow of gas is controlled by means of a thermostat C located in the upper part of the vertical tube. The weight of air M which circulates through the tube is raised from the normal temperature t to the temperature T controlled by the thermostat. The flow of gas, measured by a meter, with a special dial, is proportional to the thermal value, but on the condition that the temperature t remains constant, that the weight of air M circulating through the tube is itself constant and that all the heat generated by the combustion of the gas is found in the air at its emergence, in other words that the tube A is perfectly insulated. These conditions are met in the apparatus shown in Figure 2.

A tube A' is connected with the tube A and the air in A' is maintained at a constant temperature t with the aid of the thermostat c_1 which controls the flow of gas to a burner b_1 heating the air entering A_1. Thus T—t is constant. The two tubes A and A_1 are of the same height and the inlets and outlets to them are at the same levels. The weight of air which circulates through them is therefore a function only of the difference in density of the air at the temperatures T and t. Therefore, the weight of air is constant.

The tubes A and A_1 are surrounded with a thick coating of insulating material. The meter used for measuring the gas is calibrating in calories.—*M. G. Frere, Journal des Usines a Gaz, 1923, page 303.*

CAUSES AND MEANS OF REDUCING WATER CONTENT OF TAR

The separation of water from tar depends primarily on the specific gravity and viscosity of the latter. With viscous tars a better separation is usually obtained by warming the mixture and allowing it to settle. Increase in temperature, however, diminishes the difference in specific gravity between water and tar, and may therefore be disadvantageous with a light tar. The specific gravity of the tar determines the relative positions of the tar and liquor overflows from the settling tanks. For good separation these tanks should be deep and roomy, and the tar condensing at the various points of the cooling plant should be well mixed before arriving at them. A high water content and emulsion formation may be further due to surface tension effects, the presence of free carbon, the partial miscibility of

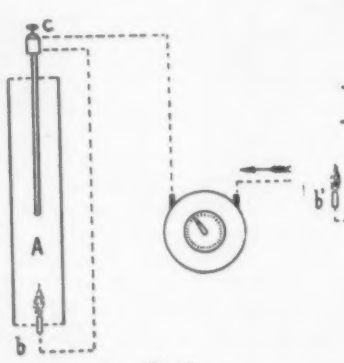


Fig. 1.

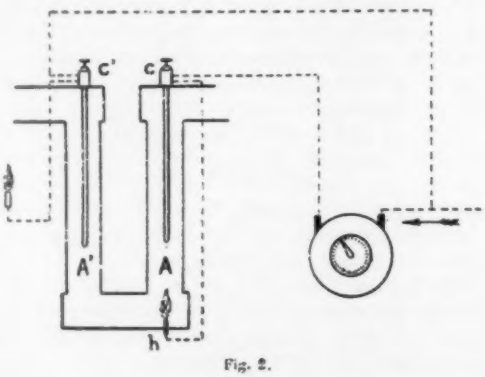
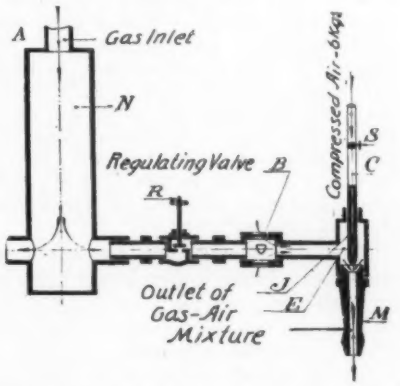


Fig. 2.

water and phenols in the tar, the presence of ammonium phenoxides, and colloidal phenomena.—*K. Bunte, Das Gas und Wasserfach, 1929, volume 72, pages 1-3.*

GAS AND AIR MIXER FOR HIGH PRESSURE WORK

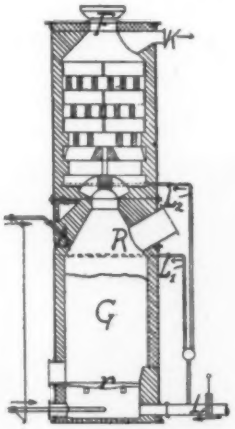
Gas is used at the main pressure (60 millimeters average) and air at a pressure of six kilograms. The compressed air is used as a fluid motor and carries along the mixture of gas and atmospheric air, assuring perfect homogeneity of mixture and complete combustion.



The apparatus consists of a gas inlet which feeds gas into a manifold from which the gas passes to a number of mixers. A regulating valve allows sufficient air to mix with the gas at the atmospheric pressure. This is shown at B. The gaseous mixture then enters the chamber E in the center of which is located the discharge tube J. Compressed air is allowed to flow into the chamber and the final mixture of gas, air at atmospheric pressure and compressed air escapes under pressure into the mixing tube M whence it is fed to the burner. The discharge tube J can slide up and down in the chamber E so that the amount of compressed air allowed to mix with the gas and air can be regulated.—*M. A. Mineur, Journal des Usines a Gaz, 1928, pages 312-3.*

PRODUCTION AND CARBURATION OF WATER GAS

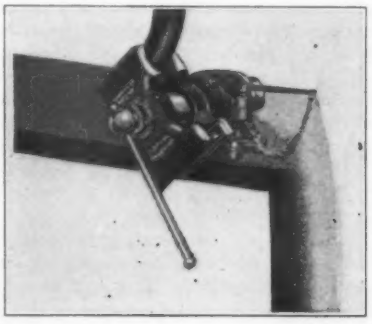
The manner in which this operation is carried out is the same in many details as the ordinary process. There are however certain important differences which are based on the peculiar construction of the apparatus as may be seen from the accompanying illustration. The coke which is located in the gas generator G is brought up to a temperature of approximately 1000 degrees C. This is accomplished by closing the gas outlet K and opening the outlet to the stack F. A current of air is blown into the generator through the main air pipe L under the grate r. The carbon monoxide gas, which is obtained in this manner, is burnt in the carburator space R or superheating chamber by means of air which is allowed to enter through the inlets L_1 and L_2. The heat developed is used for heating these parts of the apparatus. The combus-



tion gases escape through F. After the coke in the generator has attained the required temperature, the air blast is shut off and the steam inlet is opened and directly thereafter the inlet A_1 for the admission of carbureting agent. The latter is converted into vapor form after being sprayed in at R. The gases which are formed under these conditions are immediately led into the superheater along with the water gas produced in the generator, and there the various constituents are intimately mixed together due to the heat and the checkerwork within the superheater which dampens the flow of gases. Undecomposed particles of oil are also further cracked. The carbureted water gas leaves the apparatus through the outlet K.—*Deutsche Koksgasgesellschaft. German Patent No. 468,635.*

VISE FOR PIPE WORK

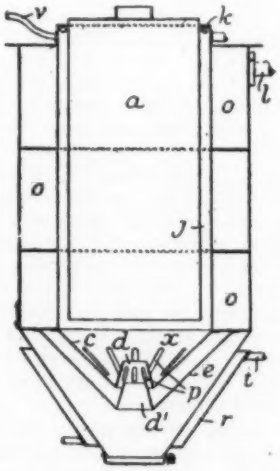
Difficulty is often encountered in securing a rigid grip on pipe of awkward length and shape. The vice that is shown in the accompanying illustration avoids



this difficulty. It has two jaws, one fitted with the usual flat serrated liners and the other with curved grooved liner which ensure a positive non-slipping grip on pipe or any kind of round or irregular work. These curved liners run the full width of the jaws, so that pressure is exerted over a large surface, preventing any twisting or movement during screwing or similar work. The entire head of the vise rotates freely around a horizontal axis, that is, in the plane of operation, and is locked at any desired position by a simple movement of a lever. The rotating movement of the vise is controlled by the friction hold of the base casting which is tightened or released by a lever at the right side.—*Gas Journal, 1929, page 280.*

GAS PRODUCER

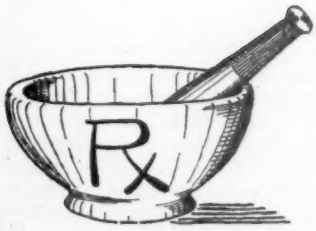
The apparatus, which is patented in British Patent No. 294, 373 and which is shown in the accompanying illustration, is utilized for the gasification of combustiles which are rich in volatile matter,



namely such products as wood and lignite as well as bituminous coal. Air is admitted to the producer through the openings k. This air then circulates through the annular space j before it enters the combustion zone x at the bottom of the fuel containing vessel a. When the gas is allowed to escape through the opening l, the vapors which are evolved from the combustible follow a sinuous course between the cones c and e which are heated and between which the volatile constitutents are subjected to decomposition or cracking. Then the gas is purified in the annular space o. Water can be vaporized in the space r and the steam can be conducted into v through the opening t. The steam may be mixed with the air used for combustion in this space.

Correction

In May 1929 issue of American Gas Journal there appeared the items, "New Method for Analyzing Tar," and "Dry Coke Quenching Installation," on pages 49 and 50 respectively. These items should have been credited to "Monats—Bulletin des Schweizerischen Vereins von Gas- und Wasserfachmännern," their original source.—Editor.



Is Business in the Dolefuls With You?

By William H. Matlack

THE gas man is not the only merchant who is confronted with the problem of extending his markets. The problem of making two sales grow where only one grew before is not alone the gas man's but it is that of a great many merchants in a great many lines.

There is nothing permanent in merchandising save change. It is a progressive proposition and for that reason, and the reason that it pays well for initiative, it is one which is interesting enough to attract millions. Some experts say that almost a million individuals are occupied with one phase of the business alone,—selling,—while countless others are devoting their entire time and talents to other phases.

Creating, styling things to sell, to merchandise; procuring items for re-sale; pricing, advertising and displaying them; surveying markets and investigating trends, occupy the time and thought of hundreds of thousands. These earnest workers devote all their time and energy to greater development along these lines, while back in the offing there awaits a market for their wares or services—represented by the buyers.

This market may be said to be the result of that popular desire to "keep up to the Joneses". It may be the result of a whim or a fashion created by the stylist; or, on the other hand, it may be the result of a shift in an industry. No matter what the cause, it is ever present and constantly calling for something different. Trends are started over night. The vogue of today is discarded tomorrow. In merchandising, yesterday ended last night.

Wings of Progress

A young man with a couple of sandwiches, together with an adventurous spirit, only twenty-five short months ago blazed a sky-trail between the Western and Eastern Hemispheres. Today almost one hundred thousand mechanics and workmen build on an average of thirty complete high-flying, high-speed planes per day, or ten thousand a year, and there is scarcely an air trail left unchartered Trans-oceanic air travel and Trans-continental combined air and rail travel have opened up a brand new avenue for merchandisers. Together with motor transportation of mail, freight and passengers, this new high-speed transportation combined with modern motorized and gas heated labor saving devices, accounts for many thousands of employees. In the railroad business alone new modes of transportation are attributed to a drop-off in

William H. Matlack

passenger traffic as well as causing the curtailment of clerical and other employees although it is said that freight traffic has shown a slight increase. The man-power reduction caused by the drop in passenger traffic has called for a shift in employment which in turn has set up a demand for a shorter working day and week to maintain forces. Whether or not this takes place is problematical, yet we find that the shorter day and week works well in other industries. It speeds up production, gives more men employment and affords them more leisure for self development and recreation. Thus new markets are set up and buying trends are changed. Human wants and desires as well as the where-with-all to satisfy them are switched from one industry to another. Somewhere, somehow, someone is thus benefited. Air transportation has created many new markets, as has motor transportation, thus, taking up the slack of other over-manned industries.

Now let us exhibit another picture, which has to do with the change in markets. The farmer is in a bad way and something over a million people, it is said, have left the farms since the boys gave up the "watch on the Rhine." The horse and mule business is gone," says a big dealer from the "yards." There is not much to it anymore. Trucks, tractors and pleasure cars have taken the place of the horse and the mule—they have corralled our business."

"Agriculture is not what I thought it was", said a professional acquaintance; "I've sold my farm for the simple reason that for the last five years it has cost me more to operate it than I could get out of it. There was time when, for instance, if a drop in the demand for corn took place we could break even by feeding it to our stock and cattle and thus salvage the crop by selling our fattened stock. Now things have changed. When there is a drop the bottom falls out and our product must be handled in the profits and loss account."

Thus we find many who are bewailing conditions. Perhaps they lack adaptability to change.

The Ailment

This lack of adaptability is largely what ails many men. It is the reason why they are not cashing-in on the new prosperity.

Now, let us look at our own industry. Let's see just why we are in the dolefuls, if we are. There may be a good reason for it. Maybe things have changed. Maybe we lack adaptability or maybe we are effected with that thing called apathy. Maybe we are over-organized.

We have in the neighborhood of one hundred and twenty millions of people in the United States. This means that we have about twenty-seven millions of homes. That is some market to serve and with our high-pressure distribution systems, our low-pressure city systems and "bottled gas" we are able to serve the majority of them with gas service. "Bottled gas" and the greatly increased transmission and distribution systems now in operation or being rapidly constructed for the distribution of both natural and manufactured gas, have extended our markets many times. Aside from this, there are the new markets being created each year, each month, each day, in the way of new homes and new home managers as well as new wants of the old home managers wishing to "keep up with the Joneses" or simply desiring to enjoy new home comfort and less home labors. Experts in home decoration estimate that there are seventeen million homes in the United States ready for re-furnishing.

Over one-half of the twenty-seven million homes in the United States are already enjoying the advantages of gas service but we all know, that they are not enjoying it to the fullest extent. So, there is our potential market. What we make

of it depends entirely upon how aggressively the one thousand gas companies supplying the forty-six hundred cities, towns and villages, and the "bottled gas" companies cultivate this existing market.

If the gas industry or the operating company in any one of these cities, towns, or villages will undertake an appliance selling campaign in the same manner that they undertook a customer stock ownership campaign only a few years ago and spend as much money to tell folks *what these appliances will do for them,* we predict it will go over with a bang. Remember, there are twenty-one thousand uses for gas and that, somewhere in the catalogue there is a new use or two for every one of these fourteen million, five hundred and sixty thousand homes.

Now, perhaps you say, "that is fine, but these people have all the appliances they need, and besides they have no money" and we understand you the very first time. You mean that either you do not know how to sell them or that it takes too much effort.

Happily though, this does not apply generally to the gas industry for it is demonstrated every day that many gas merchandise men are not only aware of the potentialities of this great market, but they are actually cashing-in on it. They are selling a great volume of gas appliances by showing folks just *what they will do for them,* through suggestion. You too, can do it. You can build a much larger market and a more receptive customer clientele. These prospective gas appliance users learned a lesson in thrift during the world war. They learned how to conserve this and do without that. The Government also taught them the value of investment, taught them what a bond was and how to go about purchasing one and just what it would do for them. Today the many millions in savings banks, the millions of share holders in building and loan associations, the thousands upon thousands of customer owners of public utilities are largely the results of this schooling.

A Good Market

Aside from this, these one hundred and twenty million people are the best insured people in the world. They are insured to the tune of ninety-five billions of dollars. They are the most luxurious living people in the world. Your potential market has ready cash — and ready cash buys merchandise. Ready money in folks pockets makes them susceptible to spending and that is what we say we want them to do; spend their money for our merchandise.

How hard are we throwing out suggestions to these people with bulging purses who are so susceptible to sales? How often do we tempt them to know the joy of having a continuous flow of hot water in their homes, to know the value and comfort of such service; how often do we laud the home laundry with its gas-heated ironer and dryer; what are we doing to instill the advisability of the use of the home incinerator for garbage and refuse; how consistently are we hammering home the value of care-free gas heating for the home; how well have we told the story of the health-giving waves produced by the radiant gas fires? Have we made an appeal to the seventeen million home managers whom the experts tell us are ready to re-furnish their homes? Have we taken advantage of the millions of words written and spoken to educate the public in regard to the value of ultra-violet and infra-red rays upon the "diseases of darkness" by explaining how gas radiant fires produce and project these rays? Have we done our utmost to inform the American home manager how easy it is to bake, boil or stew, "like mother used to" without one-tenth of the toil; by using a modern gas range? Have we actually sold our customers on the value of the home cooked foods, the oven heat-regulator, the lovely new enameled ranges in all the "moderne" hues; the smooth and semi-smooth tops, the marvelous new broilers which work without worry, or what have you?

All these things go toward making cooking a care-free job and women want that. Have we told the citizenry the great value of incineration; how all garbage and waste materials may be safely burned at home, thus cutting the tax for city collection as well as reducing fire hazards; while the ash from the material burned may be used to enrich the lawn or fertilize the flower garden?

Have we explained that personal and table linens may be quickly sterile-dried in the gas dryer no matter what the weather conditions may be? Have we repeated, in the face of all competition, that the gas refrigerator is as silent as snow and as cold as the Arctic? If we have not done all of these things over and over again there is still much work to be done. This work will result in many sales and we will find that we as well as our business will soon get in tune with the times.

Canny Advertising

We know a gas man who is applying the Scotch method to his advertising production. This man designs an advertisement that is composed of four small ads, these being two columns wide by seventy-five lines deep, and on his big day he runs them as a single two column ad. while on the four other days on which he advertises he runs them as separate ads, one each day for four days. The idea is not bad as it gives him a break for the four major or special appliances on his big day and the continuity of the line by following through with the items advertised independently four times additional during the week.

Organization Responsibility

The success of any organization rests largely upon the contentment of the men and women going to make up that organization. This depends upon the ability and far-sightedness of the management, upon its willingness to let the other fellow live.

Contentment of employees depends upon their training and opportunities to obtain not only the bare necessities of life but a share of its comforts, time to relax and play, an opportunity to lay-by a few dollars and provide against unforeseen adversity and old age.

The five day week as employed in the motor industry, the merit system of reward, the organization school and benefit systems all tend not only to promote the worker, but society as a whole, benefitting organization and producing more and better things in less time and at less cost. This enables the masses to own and enjoy conveniences that by any other system would be impossible.

Production has reached a peak. There is hardly a factory that cannot materially increase its production over night. This is generally known. We hear on every side that the problem in America is not one of production but one of distribution —economical distribution. New forces are needed in the merchandising system.

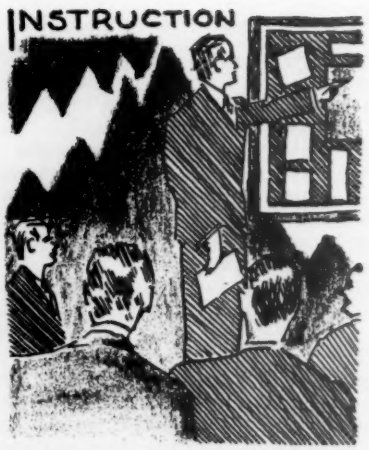
Style is creating new markets, but style is fickle; what is the vogue today may be passé tomorrow and on this basis quantity production cannot exist, hence we must look for new ideas, new uses for "what have you".

If there is a dearth of new selling ideas it is caused by our failure to get out of our own light, to get away from our own business and learn what the other fellow is doing. As brought out at a meeting of the Southern Gas Association: "Lack of plan, lack of perspective all indicate this."

When we are too close to our business we are bound to have preconceived ideas and are prone to follow traditions with the result that we are out of tune and that instead of working out a new sales slant by making an exhaustive study of the thing in hand we simply revamp some old idea "that worked."

It was said that our sister industry had larger opportunities than we have. It was also said that the manufacturers in that industry had more to offer the dealer in the way of helps, advertising, window display and plans and that these helps were devised and perfected months ahead of the time when the appliances were to be exploited and offered to the customer.

Present plans to promote gas appliances



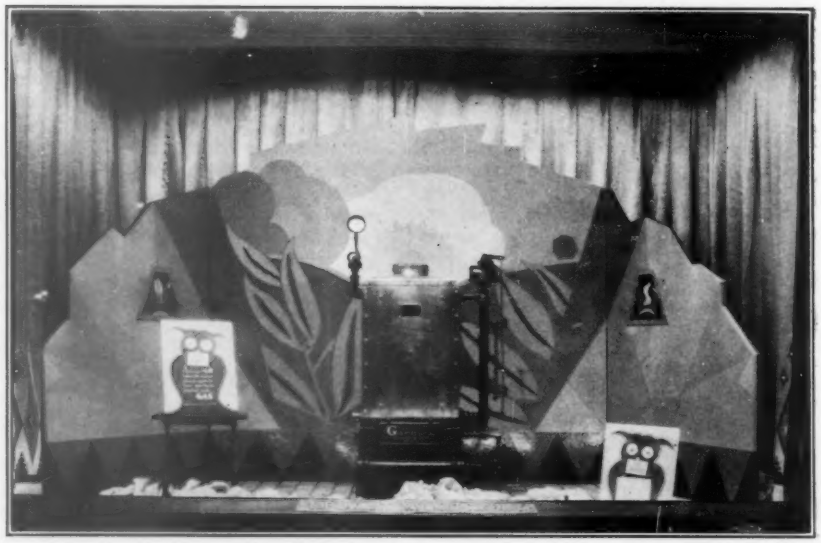
include plans to advertise ranges circulating water heaters, storage heater, clothes dryers, incinerators, washers, ironing machines, refrigerators, radiant heaters and house furnaces and boilers and no doubt there are plans and helps to sell a dozen or more small appliances. As we view it it is not so much; "no plan" as it is the state of mind "that it can't be done," a lack of vision, resourcefulness, adaptability or what you will.

However, there are many gas men who are taking full advantage of these plans with resultant outstanding sales. These men are the resourceful ones, the men of vision, vision that interprets trends or changes. They are the men who have come to the realization that to take advantage of these changes they must plan ahead to undertake a definite thing at a definite time. That is all that our sister's merchandising men do.

It's the old story of having a plan and carrying on, mobilizing, organizing, and instructing, advertising, displaying and demonstrating, pricing properly. Everlastingly, telling folks "what it will do for them" will sell any item of the full line of gas appliances.

House Heating Window Display

Here is a window display advertisement that should hold some valuable suggestions for the men who wish to promote gas



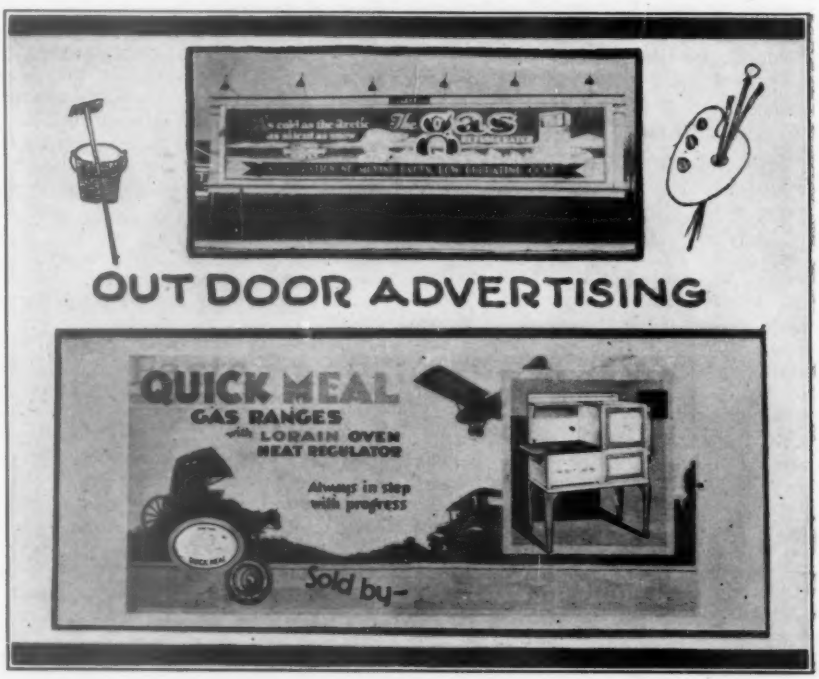
house heating during this or succeeding months. This window is the work of S. C. Rieser, Display Manager of the Laclede Gas Light Company, St. Louis.

As may be seen from the reproduction, Mr. Rieser has introduced the gas boiler to the window shopper in a moderne setting. A screen painted in the newest pastel hues, with two small shadow boxes playing-up the carefree, smokeless fuel, a single appliance and two show cards, a curtain background of grey stuff with modernistic border and fringe make an attractive set-up.

We wish to call especial attention to the simplicity of this display and to its power to attract and hold attention. It's a typical Rieser display and as we study it we are of the opinion that the ruse relied upon by Mr. Rieser to intrigue interest is, that he ties in the complete display to the appliance rather than to building a glorified poster to put-over his product.

Outdoor Advertising

Peddlers tell us that the gas man is going strong for outdoor advertising. "Posters and painted bulletins," they say, "are being used by any number of gas men." In some instances the manufacturer is furnishing the paper and providing for a portion of the cost of posting and imprinting local names and addresses. In other cases the utilitites are devising their own copy and having local poster artists



do the work for them. In both cases the expenditures are charged to new business advertising.

As we view it this is good advertising for the industry at large for the simple reason that, located as these bulletin boards are, along the highways of heavy travel, they spread to the whole nation the gospel of the uses for gas, the carefree fuel, and the advantages of using modern gas appliances in the home. However, we would like to suggest that for the very reason that these advertisements have such wide circulation they be well thought out and executed. If painted bulletins are to be used careful thought should be given to location and colors to be used to secure greatest visibility, and harmony in relation to the appliance or service being advertised. When using painted bulletins do not farm them out to sign painters. Employ artists to do your work, men who know the value of color and have a distinctive technique. When posters are used instruct the plant owner to use the new non-wrinkle posting method and include in your contract a clause calling for landscaping and an insurance against "flags". Bulletin boards that are obscured by weeds or are located where wind and rain rip out hunks of the poster are, to say the least, unattractive and hence nonproductive.

Good Lay-Out Work

From three points of the compass come three distinctively good gas company advertisements. Look 'em over! The manner in which these gas men handle their layouts is exceedingly good. We particularly call attention to the two advertisements shown on the angle; they are very good illustrations of what a resourceful advertising man is able to do with a single column advertisement.

Roper's Attractive Cut-Out

Here's a new silent salesman that should materially help sell gas ranges. This life size cut-out lithographed in four colors from an actual photograph is said to be attracting much attention when used in connection with window and store displays.

The young lady, Miss Roper, appears very real, in fact so much so that customers have been known to try to engage her in conversation and "one customer," according to P. H. Hopkins, "has gone so far as to attempt to secure the home address and telephone number of the young lady." This cut out when used in connection with a range display in either the window or on the sales floor, is calculated to attract attention and draw folks to the range. It is sturdily constructed, having easel supports that may either be weighted or tacked to the floor to prevent the figure from being blown or knocked over. Another feature of the display is the movable arm which may be placed in position to rest upon the range beside which it stands.

good gas ads.
Now! no need of waiting for hot water
All modern homes have hot water immediately
Company in the kitchen
INSULATED TAPPAN VENTILATED
What
Don't let it bother you another season!
CONSOLIDATED GAS COMPANY
P-G-E

How to Sell Laundry Equipment

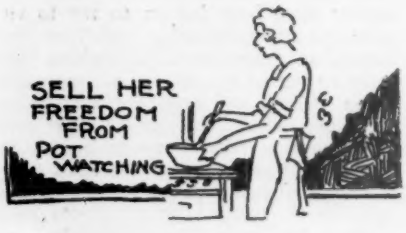
A man who is said to be a Master Merchandiser says: "In selling home laundry equipment the place to sell it is in the store. This is especially true of washers and ironers. If you want to get a worthwhile volume on these items have them demonstrated on your floor. Secure the services of a woman demonstrator and place her where folks enter and leave the store. Display these appliances prominently and have them doing their stuff. This sort of set-up will develop many

prospects for the salesmen to work on and a surprising number of direct sales will also be made."

This seems logical and appeals to us as a good idea not only as a prospect developer but as a good-will builder, since women are more apt to purchase such items when "they see how it is done." Notwithstanding the number of such appliances that have been sold there are still many women who have not purchased for the simple reason that they question their ability to run one of these machines and save themselves the labor involved by the crude hand method.

The Main Selling Point

"Color arrests attention, innovations arouse interest and saving them from pot watching gets the order," said a commercial man who knows his gas ranges. We are inclined to the same opinion and if we will carefully figure out what our appliances will do for the woman in the home and consistently and continuously drive home that message in our sales talks we will not have to side-step for any other type of fuel. We know that color plays a big part, we are appreciative of the fact that we must stress "newness"; yet, we feel that our strong appeal is in "the what



it will do for you". This not only applies to gas ranges but to the other items that we sell, so why not play it up along with the fact that our appliances have color and special features, when approaching the woman in the home?

How Canada Does It

Reproduced below is an advertisement from across the border to the North. This advertisement was used by the Hotel Division of the Consumer's Gas Company, Toronto, Ontario, Canada in a cooperative way with the announcement of the opening of the Empire's Greatest, new hotel, The Royal York in that city. As you may judge from the array of cooking appliances shown in connection with the advertisement the Royal York is a teetotaler when it comes to all gas kitchens due to the efforts of the Consumer's Co.

The Empire's Greatest—
the ROYAL YORK
depends on
GAS
to cater
to its
thousands
of
Guests
GAS 40 Heavy Duty Gas Ranges
GAS 18 Gas Salamanders
GAS 3 Gas Bakers Stoves
GAS 11 Heavy Duty Gas Broilers
COMMERCIAL and industrial Toronto prepares to celebrate the opening of the great hotel and congratulates the owners and builders upon the completion of a work that fittingly bears the name
"ROYAL YORK"
To the manufacturers of Toronto it is a source of gratification that this is the enterprise of a Company whose history is the history of modern Canada and whose policy is consistently in support of the trade that follows the flag around the world.
From the beginning, the words "Canadian Pacific" stood for a splendid faith. Today they stand also for many things more tangible, including this great building, the last word in luxurious and serviceable equipment. The Consumers' Gas Company of Toronto, as one of the City's oldest commercial enterprises, welcomes the new hotel with its twelve hundred employees to the city. The Consumers' Gas Company expresses also its appreciation of the very large volume of business with which it has been favoured by the Royal York Hotel.
The CONSUMERS' GAS COMPANY
Hotel Division
124 Richmond St. W.

This is very nicely arranged and well written advertisement and, we'd say, a mighty fine example of one way in which a city may be made gas conscious.

26 Standard Instant Use Chart Forms Now Perfected

Possibly there is no business where the value of instant visualization of facts is so vital and necessary as in the Research Department of an Advertising Agency. One of the country's leading advertising agencies cooperating with leading business experts and a group of college professors, has perfected twenty-six forms of Instant Use Chart Stationery which are now being used not only in its own Research Department, but by over two thousand business organizations throughout the country.

A booklet just published by the Business Charting Institute entitled "Better Foresight by the Use of Instant Use Chart Stationery" tells all about the use of these twenty-six forms. A copy may be secured free by addressing the Business Charting Institute, 1813 Tribune Tower, Chicago. The book also describes very useful and practical automatic ribbon chart which may be used in individual units or in banks of three, six or twelve to instantly visualize the condition of any important business results.

The Use of Direct Mail in Gas Company Advertising

Henry Obermeyer

Asst. to Vice Pres. Consolidated Gas Company of New York

THE Committee on Regional Advertising of the American Gas Association compares direct mail advertising to the clipping of coupons on a serial bond. The description is an apt one and I am sure I prefer it to the more frequent comparison with a watering pot. The first comparison assumes, quite correctly, I think, that you have already made an investment in advertising. Like any other investment, it doesn't do you much good unless you collect the returns. The watering pot metaphor assumes that you have planted the seed in presumably fertile ground and that the sun and the showers, aided by other bounties of nature, will grow a crop of sales, in due season, provided you do a little weeding now and then on your prospect lists, in addition to a little artificial sprinkling with advertising at regular intervals.

Investment Idea

I like the investment idea because it applies perfectly to the conception behind your regional advertising program. If you object that you cannot afford to advertise properly, is implies the ready answer that you cannot afford not to I am sometimes afraid that sooner or later you are going to tire of hearing us advertising men urge you to spend more money on advertising. Let me assure you right now that we haven't even started. Don't get the wrong idea, however. It's not huge advertising appropriations that we are pleading for, but merely the opportunity to demonstrate how we can bring you larger returns for every dollar that you spend on sales promotion.

You may think that the cost of living has increased somewhat during the last generation. What about the cost of doing business, which has increased at least ten times as much, (and I am speaking of its ratio to each dollar of gross revenue)?

"The trend through the six years, 1921 to 1926, shows a steady increase in cost per inquiry averaging 4.6% per year," according to A. T. Falk of Gordon-Van Tine Company, in the April issue of the Harvard Business Review. Competition and increased rates for space and printing are the principal items in this situation. Now-a-days, "to run across an advertisement without looking for it requires the most fortuitous circumstances," says Mr. Falk.

With such influences at work, it is a wonder to me that the cost per inquiry is not even greater. Only the increased effectiveness of individual advertisements has served to keep the figure where it is. Let me say again, therefore, that the primary object of the advertising man is not to increase your selling costs, but rather to improve and increase your results, and, by greater volume, reduce the cost of merchandising per unit of sale.

As a medium, I have found that direct mail advertising helps materially to lower the average of advertising and selling costs, and that the longer it is continued the more valuable it will prove to be. As advertisers, we all know that the whole influence of a given advertisement cannot always be measured by any standard rule or gauge. There is a wide margin of benefit which is not immediately reflected on the sales floor, or which even at the point of sale is not readily identifiable as the product of advertising. I have very little sympathy however, with advertisers who claim for advertising all the benefit of the doubt. I believe that all advertising should be made to show some definite returns. The proportion varies according to the locality, the industry and the type of return desired. Yet my short experience in using direct mail advertising seems to indicate that the margin of immeasurable results should not exceed 90% of the total. That is to say, approximately 10% of your advertising can be reasonably measured in direct returns. Multiply that by 10 and you will have some measure of its effectiveness. This is important when you try to work out the ratio between cost and results.

Direct Mail Cost

For reasons which I will touch on later, the direct mail advertising of the Consolidated Gas Company has been fairly high in its requirements. Except in so-called "bill stuffer" advertising, which is an entirely separate field, we do not encourage requests for literature or other inquiries based on curiosity alone. Every reply to our advertising is a request for a salesman or representative, usually indicating that the prospect is ready to discuss an early installation. Including all factors of printing, art work, mailing, etc., we found the cost per inquiry at the start to be in the neighborhood of $30. By improving our technique, as well as our mailing lists, we have brought this cost down to approximately $20 per inquiry and there is no reason why this cannot be further reduced to between $10 and $15.

Outside of the advertising message itself, there are, after all, only two problems that are fundamental to successful advertising. The first is how to tell the story to the greatest number of interested people (and interest here of course includes ability to buy). The second problem is that of reducing the cost per return or sale.

We recognize at once that newspaper advertising is the most obvious, and probably the best method of solving the first problem. The second requires the use of supplementary mediums.

I recall the case of a man who lives in the territory served by one of our suburban properties who, prior to our extensive use of direct mail advertising, remarked in criticism of the gas company's merchandising policies, "I have been living in this house for more than three years and I have never received a single advertisement from the gas company." I reminded him that our advertising has been appearing, regularly, in the newspapers which he read both morning and evening, but it was evident that these lacked something of the personal appeal. It's a story familiar to all salesmen. While general advertising builds up demand and interest, the "ask them to buy" element is needed to make the sale.

The Important Thing

The unique virtue of direct mail advertising lies in the fact that it forces you to make at least two choices, and to that extent brings the advertising message within the carmed circle of your attention. It is impossible to ignore a piece of mail addressed to you. First of all, then, you have to choose whether or not you shall read it. It is often objected that direct mail advertising is thrown into the waste paper basket. So is everything, eventually. The important thing is not where it goes, but what you do with it, what happens to it on the way.

You make a second choice when you decide whether or not to respond to the suggestion made in the advertisement, whether to buy or to investigate further.

There are important matters for the gas company and if I do nothing else, I hope I can impress upon you this one thought. The gas industry is not truly a national industry in the same sense that the chewing gum, tobacco, steel, or even electric interests are industries. The mark of an industry today is national distribution backed by national advertising. The gas business is still a local affair with the limited resources of other local business forms. It is only when we rouse ourselves to the point of putting aside local interests and provincial boundaries for the common good, as typified by the National Testing Laboratory of the American Gas Association, or your own pioneer work in regional advertising, that we become a force in national affairs and have any right to expect our neighbors and customers to take us seriously.

In expanding your business, you are not only fighting the direct competition of the coal, oil and electric dealers in the present battle of fuels; you are bucking all of

Presented at A.G.A. New England Regional Gas Sales Conference, Marblehead, Mass., June 21-22, 1929.

the huge sums, the hundreds of millions of dollars spent annually by national advertisers in newspapers and magazines, with their colorful displays, their wonderful art work, their constant repetition and buying urge. The Gas Company has only one weapon at its disposal to combat these influences and that is the weapon of neighborly contact. You are facing sure loss if you do not capitalize this influence to the utmost, by personal call, when possible, but, in any case, by mail as the most economical method of approach.

The Reason

Representatives of electric manufacturing concerns, at the annual meeting of the Public Utilities Advertising Association in Chicago, a few weeks ago, reported that manufacturers of electric appliances and equipment are spending as high as $1.07 per meter for advertising in national and local publications, exclusive of trade paper advertising. This represents 2% of their entire gross revenue. Whether or not that figure represents the increased cost of doing business, it is, nevertheless, one of the reasons why the public regards this as an electric age. No one interest has a monopoly on this age, which is the age of comfort, economy and convenience. It is just as much the chemical age and the gas age, but you would never know it if you were not in the business yourselves.

Regional advertising here in New England is giving you a wonderful background on which to apply your individual advertising and selling efforts. But the picture can't be all landscape. It needs some figures on it, and not in red ink either. People are buying something somewhere every day, and less and less because of necessity. You remember the clerk who was missing for an hour one day and came back almost withering under the glare of the boss' eye. "Where have you been?" said the boss. "Getting my hair cut," said the hireling. "What's the idea of getting your hair cut on my time?" "Well," said the clerk, "It grew on your time, didn't it?"

While your salesman is negotiating with one prospect, another prospect is buying elsewhere on your salesman's time. Direct mail advertising can be made to work for you all the time and in all places at once. People read advertisements of all kinds but they respond most readily to the advertisements that say "this means you." Like the little girl when asked the time of day who replied, "Well I know it isn't half past four yet because mother told me to be home at half past four and I'm still miles away."

If you are going to do direct mail advertising, don't begin until or unless you are prepared to put as much care and preparation and organization into it as in any other form of effective advertising.

Don't tackle the job unless you are willing to plan your schedule over at least a year.

Don't used "canned" material supplied by manufacturers, except as an added enclosure that has an appropriate connection with your individual selling message.

Use special offers such as low down-payments, free trial installations, and allowances on replacement sales wherever possible.

Use good art work and don't try to save on the quality of paper, remembering that your postage stamps will probably be your biggest item of expense.

Don't fold your mailing matter too many times to fit a standard envelope. Cardboard is cheap and insures your broadsides and folders against arriving in mussed or torn condition. If the envelope required is too large to go through your stamping or addressing machines, use gummed labels if necessary.

Appearance is all-important and is frequently the deciding factor when the recipient exercises the first of his two choices.

Use return post cards always and pay the postage yourself. The post office has made this easy by the granting of so-called business reply permits which enables the inquiry to be mailed without a stamp, being paid for C. O. D. by the business firm on receipt. Whatever you do in your advertising, be specific on the return post card. Of all the bumps on the human phrenology, the bump of curiosity is the most universal and the habitual coupon clipper and booklet collector is one of the minor pests of modern business. Word your inquiry cards in such a way that your salesman's time will not be wasted in chasing down unprofitable leads, for there is no surer way of making you give up this valuable medium in disgust, before you have even fairly started.

One concern had to hire 6 mailing clerks to open its mail alone, following the insertion of a certain advertisement. The sales force wore out shoe leather answering the inquiries and lived on their drawing accounts until the firm woke up and changed its policies. Don't look for a heavy return mail but rather let your advertising results be measured by bona-fide inquiries and sales.

To Help Salesman

Direct mail advertising is designed to help the salesman, not to embarrass him. The best endorsement is when he tells you "I never got so much help from the company before." And if you really do the job as it should be done, be prepared to hire as many additional salesmen as you need. Since we started this advertising in New York, our sales manager tells me that the sales force has not had time for a moment of "cold turkey" canvassing.

Most direct mail campaigns fall down at the start in making up the mailing lists. There are varying opinions as to the degree of importance which is attached to the mailing list. All agree, however, that if this part of the plan is not carefully carried out, the rest is of little or no value whatever.

Both preparation and maintenance are essential. Some authorities assert that the mailing list should represent 25% of the entire direct mail expenditure.

Investigation by an advertising concern shows that practically 90% of the addresses on a mailing list are worthless after three years. Out of a total of 1,000,410, people changed addresses 1 to 14 times; 261 moved to parts unknown; 124 have already purchased the product; 83 have bought a competing article; 7 have died, and one has gone to jail.

Dun's Credit Listings require 5,727 changes every business day, or an average of from 2 to 3 changes per day per 1,000 names. Your customers' ledgers give you an added start over other concerns. But each name must be verified and classified.

William C. Sproull, advertising manager of the Burroughs Adding Machine Company says: "Our experience with purchased mailing lists has been that they have something like 20% errors."

Our plan is to have the district salesmen call on the customers and verify the names and addresses, at the same time ascertaining and noting on cards whether they are prospects for house heating, water heating or both.

Hines' Diagnosis

Edward N. Hines, president of the Speaker-Hines Printing Company, says: "The fault with most lists is that it is a man size job to make one and they are usually put together by someone having a child-like mind. People die—a common fault of nature—they move from place to place, ownership and names change, executives come and go, men fall in love and are married, women marry without falling in love, and only the good Lord knows what is happening."

Ray N. Fellows, sales manager of the Addressograph Company, sums up the weakness of mailing lists in one sentence which is this: "Clerks are given the job without the aid of executive plan."

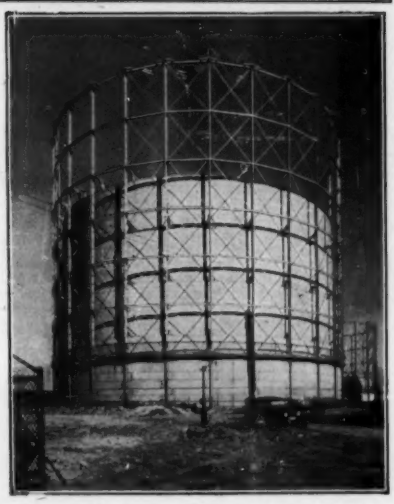
Don't try to see how big a list you can get. Every name should mean something. Waste circulation is one of the principal items of loss in all advertising. The smaller your list, the better grade of paper and art work you can afford to put into your material.

Timeliness has a value of its own. I assume that you will not advertise fireplace heaters in July, but the seasonal factor is not the only element of timeliness. Moving time and immediately thereafter is often the psychological moment to suggest the purchasing of household appliances. The milk companies often pay big money for information on removals, and there is an actual case of a concern selling coal boilers who purchased such a list from a gas company which did not know the value of its own resources.

Every time you receive an application for gas there is an opportunity to tell the complete story of your service while the prospect is in a receptive mood.

(Continued on page 59)

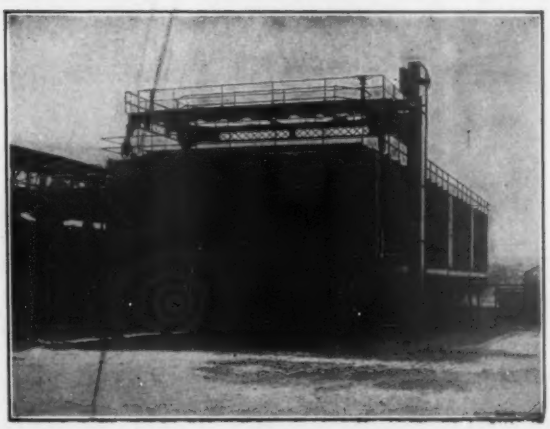
"Built to Insure Good Service"



The "Stacey Bullet", to paraphrase the slogan of the Columbus Electric and Power Co., which appears on the pair of "Stacey Bullets" shown above, is "Built to Insure Good Service" to every Gas Company and consequently "Good Gas Service" to the community.

The "Stacey Bullet" is a most practical and economical form of high pressure storage. Any number of sections can be added as required, thus making it an investment that pays generous dividends in utility, longevity and ample service as needed.

The Ten Million cubic foot holder at Buffalo, N. Y., shown here was likewise "Built to Insure Good Service." Long Beach, Calif., has also been well served by a Stacey Bros. Ten Million Holder and now the Pacific Gas & Electric Co., has ordered a Stacey Bros. Ten Million to serve San Francisco.



Stacey Brothers Purifiers are built with characteristic thoroughness, reducing to a minimum the cost of operation and maintenance.

Acquaintance with our facilities, policies and methods will prove to you our

"Ability to Serve"

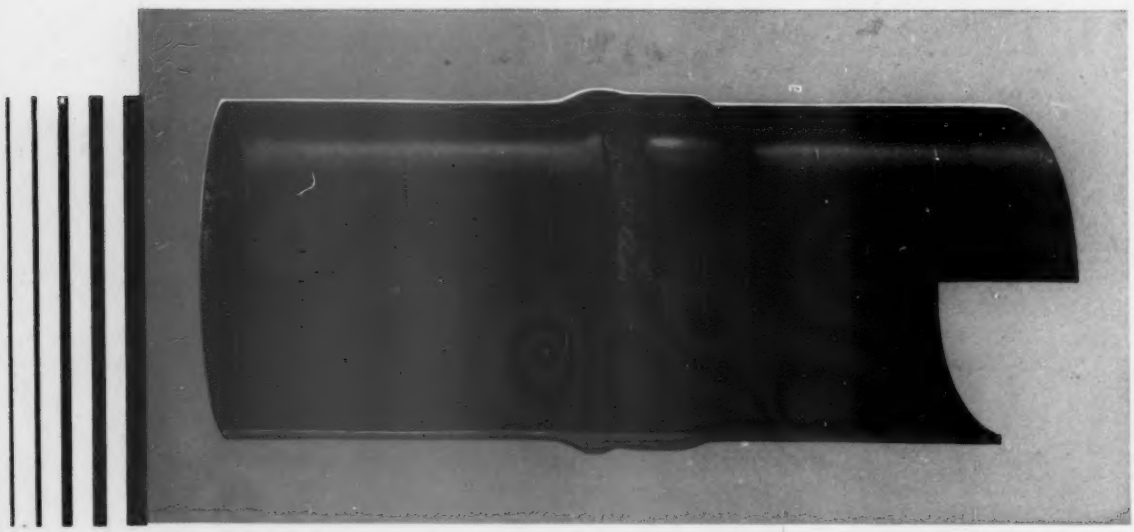
STACEY BROTHERS GAS CONSTRUCTION CO.

CINCINNATI, OHIO

JAMES E. STACEY, Pres. ANDREW J. STACEY, Vice-Pres. WAYNE STACEY, Gen. Sales Mgr.
ARTHUR A. POPE, Sec. and Treas. WILLIAM A. MILLER, Chief Eng. P. C. Rodgers, Asst. Sales Mgr.

NEW YORK OFFICE—75 West Street—P. F. McEnaney, Mgr. Tel. Bowling Green 8186
New England Representative—Eastern Service Co., Boston

The SMITHWeld Bell and Spigot Joint



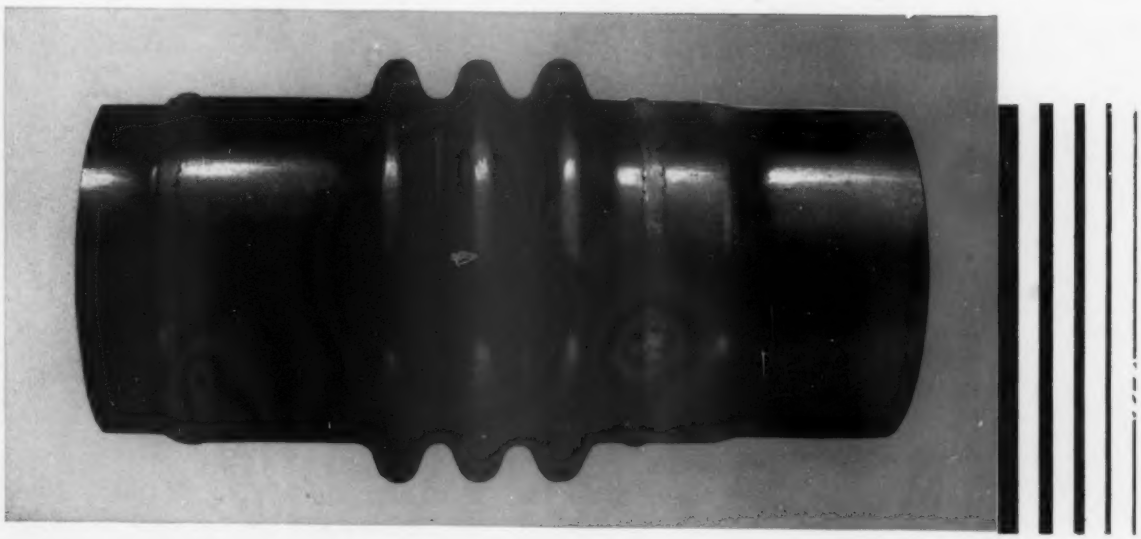
A new joint for Pipe Line Construction that offers many advantages including: ease of stabbing; correct stabbing distance; weld in tension or compression—never in shear; elimination of "icicles"; 100% joint efficiency in the field weld. In combination with the SMITHWeld Expansion Joint it makes all welded construction the ideal construction for pipe lines.

SMITHWELDED

A. O. SMITH CORPORATION

Oil and Gas Field Products Division

The SMITHWeld Expansion Joint



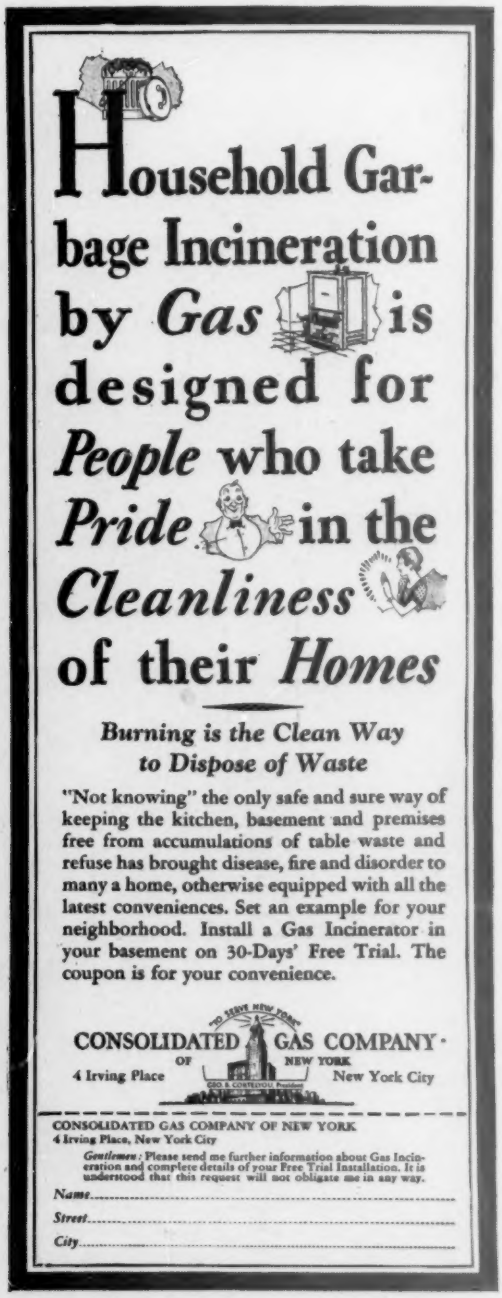
Another New Joint for Pipe Line Construction that overcomes the oldest and most persistent trouble encountered in large diameter all-welded lines—that is, the tendency to part or buckle with contraction and expansion.

The design and the manner of application of these joints to steel pipe and the methods of their manufacture in steel are decidedly new.

LINE PIPE

General Offices: Milwaukee, Wisconsin

District Offices at: New York—Tulsa—Houston—Los Angeles


Household Garbage Incineration by Gas is designed for People who take Pride in the Cleanliness of their Homes
Burning is the Clean Way to Dispose of Waste
"Not knowing" the only safe and sure way of keeping the kitchen, basement and premises free from accumulations of table waste and refuse has brought disease, fire and disorder to many a home, otherwise equipped with all the latest conveniences. Set an example for your neighborhood. Install a Gas Incinerator in your basement on 30-Days' Free Trial. The coupon is for your convenience.
CONSOLIDATED GAS COMPANY OF NEW YORK
4 Irving Place New York City
CONSOLIDATED GAS COMPANY OF NEW YORK
4 Irving Place, New York City
Gentlemen: Please send me further information about Gas Incineration and complete details of your Free Trial Installation. It is understood that this request will not obligate me in any way.
Name
Street
City

For insertion in

Evening World	June 17, 1929
N. Y. Sun	June 18, 1929
N. Y. Telegram	June 19, 1929
N. Y. Journal (Harlem, Bronx, Washington Heights Section)	June 20, 1929
Evening Post	June 22, 1929
Herald Tribune	June 24, 1929
Morning World	June 25, 1929

Newspaper incinerator advertisement used by Consolidated Gas Company of New York which is supplemented with 60,000 special broadsides mailed to a selected list of prospects.

KERNIT

REDUCTION IN LIST PRICES

F. O. B. Ampere, N. J.

	List	*Net*	*Margin*
No. 3 (3 bushel)—	$165	$ 99	$66
No. 4 (4 bushel)—	$195	$117	$78

Special Price on Display Sample

$75.00 Net

Delivered fully equipped with Time-O-Stat and Lighter

Tested and approved by leading Gas Company laboratories—

Burner consumption 100 cubic feet per hour.

Sales Manual containing samples of all Kernit literature and sales suggestions sent on request.

Sample Kernit will be sent for inspection and test, without obligation or expense.

KERNIT INCINERATOR COMPANY

Ampere, New Jersey

The Use of Direct Mail in Gas Company Advertising

(Continued from page 54)

Classifying your lists is the next step in order. For practical purposes these can readily be divided into four classes:

First in order and importance is the house heating prospect in a private dwelling. He can be set down as a prospect for every domestic appliance that the gas company sells. He can afford it, and he may be supposed to have proper facilities for its use. Second, comes the man who is not a prospect for house heating but should be sold an automatic water heater. Usually he lives in a rented house, or else his own house is of modest proportions. In addition to water heating he may also be a prospect for a new gas range, fireplace heater and possibly a laundry dryer, ironer and gas refrigerator.

The third and fourth classes are more likely to be met in larger cities and towns. But they are increasing every year, as shown by the recent statistics of the United States Bureau of Labor which has recently completed a survey covering 257 cities. This survey shows that the percentage of families housed in apartment houses has increased in the past 7 years from about 24½% to nearly 54%. This is the third consecutive year since the compilation of such data by the Bureau that more family units have been provided in apartment dwellings than in one family dwellings, and is the first year that more families were provided for in new apartment houses than in one-family and two-family houses combined.

There are two kinds of apartment houses. First, cooperative ownership and second, tenant leased. The cooperative apartment owner is good for a new gas range, a refrigerator, a space heater and possibly a laundry dryer. The rented apartment dweller is an immediate prospect only for a gas refrigerator and occasionally a space heater.

Advertising of other appliances can do much good among this latter class of customers, however, since pressure from the tenant can often be used to induce the owner or agent of the building to install modern gas ranges and refrigerators through the building, as well as to provide large volume water heating service in summer months and central laundry drying facilities.

It is desirable to effect some plan of weeding out this list from time to time to take care of customers who have already purchased a particular appliance. This is not absolutely necessary so long as mailings on a particular subject are not too frequent, since it does no harm to have the purchaser's original judgment confirmed by additional arguments. If he is sold on your service, he may feel inclined to pass the advertisement on to a friend.

In closing, I think I should stress the advisability of organizing your own department to carry on all the details of a direct mail campaign. It is absolutely impossible to do this on a part-time basis. Your postmaster can give you much advice and assistance, if you will confer with him, since the post office department has developed many excellent facilities for keeping mailing lists up-to-date and otherwise relieving the direct mail advertiser of much detail connected with the physical work. We often think of the post office as being the most perfect monopoly, but you will be surprised to learn that there is competition even here. Increase in postmasters' salaries are regulated to some extent by the amount of business done in a particular branch. We had an example only recently where a branch office in another part of the city offered to send a man to sort the mail and take it away each day if we would agree to buy all our stamps at that place.

As a member of the Committee on Regional Advertising of the American Gas Association, I have received much personal benefit from watching the progress of your very fine and outstanding achievements in this field. I am indebted to Mr. Williams and others for a most instructive period of 3 or 4 days which I spent in Boston during the latter part of February. One hears everywhere, particularly from appliance manufacturers, of the excellent results of your program. Recent statistics of the growth of the gas business in New England leave no doubt that such results have been plentiful, but I notice, too, that no one has been able to place his finger on any specific example in the sale of a particular appliance. The results are there, undoubtedly, but nobody can tell exactly where they are and what they consist of. Intelligent direct mail advertising will help you to find the answer to this question, and, in my judgment, will be well worth doing even if it accomplished nothing more.

One last warning, however,—if you don't get results right away, don't blame it on the medium unless you are absolutely sure you have played the game conscientiously and followed through according to the rules.

An Unusual Display

THE large new headquarters of the Portland Gas & Coke Co. at Portland, Oregon certainly offer opportunities for wonderful displays.

The accompanying illustration shows a splendid setting for Radiantfires. The enormous fan reaches 17 feet above the ground and in brilliant sunburst colors is very striking.

On either end is one of the combination Radiantfire mantels, while the remainder of the space is large enough to set off ten radiantfires without in any way crowding them. The soft-red tile floor adds to the beauty of the display accentuated by the green of the ferns and palms.

Being set back from the windows as it was, the display could be seen from any of the five twelve-foot windows. We are informed that the sales of Radiantfires during November, when this exhibit was run, amounted to almost three times what they were during November, 1927. The display was part of the special campaign.

It is estimated by the Portland Gas & Coke Co. that five radiantfires equal in gas consumption the average gas furnace so that the nearly 7,000 radiantfires put out by the company in Portland contribute very handsomely to the house-heating load.

Equipment News

New Vulcan Radiant Surface Broiler

The new Vulcan Radiant Surface Broiler is stated to embody an entirely new principle.

Radiant heat is produced on the face of a porous alundum slab. The gas is forced through the slab and lighted on the exposed face which it quickly brings up to incandescence, thus producing a radiant bed of fire like that produced by charcoal. The advantage is that the heat can be produced almost instantly at a turn of the switch. It does away with charcoal and ash handling, fire building and tending and demonstrates again the supremacy of gas as a cooking fuel.

In operation, the radiant slab projects a heat of 1,300 degrees downward as compared with an ordinary burner producing only 750 degrees most of which rises instead of projecting downward.

The radiant heat has a penetrating quality which cooks the food, it is claimed, 25% faster than any other known method and thereby preserves the vitamins and retains the flavory juices. This greater speed enables prompt service to patrons and increases capacity.

Gas consumption is very much reduced due to the new method of combustion. Upkeep costs are practically nothing.

It is exceedingly easy to operate, the entire control being centered in a single switch. For this reason the service required by kitchen employment is reduced to a minimum.

It is claimed that the success of the broiler has been proven by laboratory tests for more than two years and field tests of twenty-five units. These Broilers have been in some of the best hotels in the country for more than a year and under the most severe conditions have proven that they do everything claimed for them and more. The burners showed no deterioration whatever.

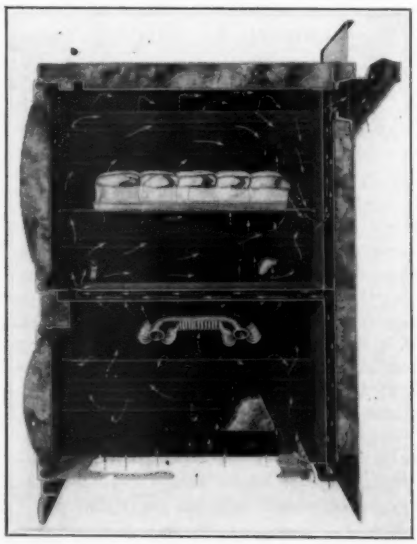
Roper Insulated Oven Range

The newest addition to the Roper Line of Gas Ranges is the Roper Insulated Oven Range.

The insulating material used in this range was decided on only after long experimentation and it is stated to be the only 100 per cent, fire-proof, chemically stable, insulator known today. Tests have shown that it will not pack down, crumble or rust.

In addition to its quality insulated construction, this new range has the Roper Ventilated Oven. The combination of these two features in one range will, it is claimed, give to the housewife a cooler kitchen and greater economy in gas consumption, and will insure her of perfect baking results.

Many convenience features which have been developed by the Roper Organization are available on this new insulated range. Some of these are: the Roper Complete Oven Control; the new Self-Slide Broiler and Super-Broiler Pan, the two broiling aids recently brought out by the Roper Corporation; "Touch-a-Button" Top Lighter; Rust-Proof Porcelain Enamel Oven Linings; and Utility Drawer.



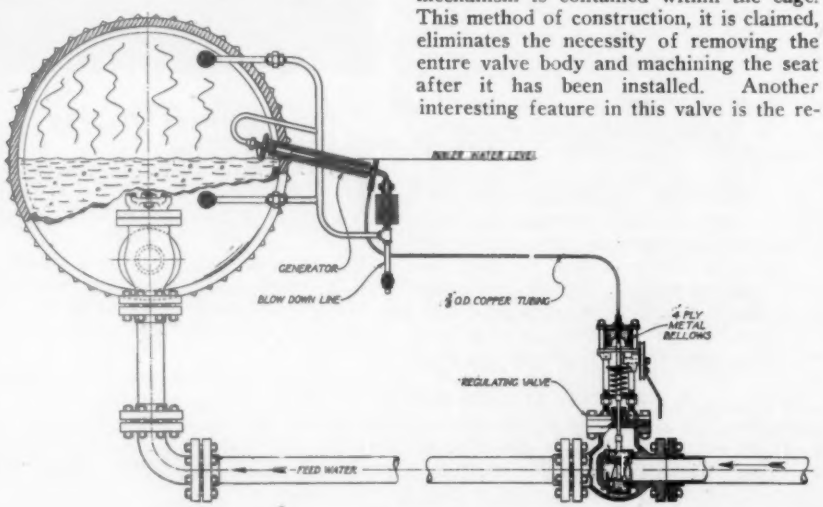
Roper Insulated Oven Ranges may be had in the all white finish, full gray and white finish, three-quarter white finish or the three-quarter gray and white finish.

The New Bailey Thermo Hydraulic Feed Water Regulator

A thermo hydraulic feed water regulator which, it is stated, embodies many new and improved features has just been announced by the Bailey Meter Company of Cleveland, Ohio.

The regulating valve used in this new Bailey Thermo Hydraulic Regulator, is said to be tight seating, has scientifically designed V-ports and is fully balanced. In operation these features result in freedom from danger of flooding boilers at low rates of steaming or when on bank; smooth continuous feeding of boilers while in normal operation; and a positive, non-chattering action of the regulating valve.

If seats must be reground or replaced the entire valve cage can be removed from the Bailey Regulating Valve without removing the valve body from the line. The old cage, or a new one, can be replaced in the valve body with the assurance that all moving parts will be in perfect alignment, since the entire balanced valve mechanism is contained within the cage. This method of construction, it is claimed, eliminates the necessity of removing the entire valve body and machining the seat after it has been installed. Another interesting feature in this valve is the re-



cessed rings in the valve cage immediately below the valve seat. The purpose of these recessed rings is to prevent cutting of seats and valve discs by wiring drawing at the tips of the V-ports. By means of these rings the flow is evenly distributed so that equal wear occurs on all parts of the seat when the valve is operating near the closed position.

A lever and cam is provided on the regulating valve so that in case it ever becomes necessary to regulate feed water by hand the regulating valve can be quickly opened by a half turn of the by-pass lever. For installations where the valve will be located at a considerable distance above the operating floor a sheave wheel is provided on the valve so that it can be by-passed by means of a cable operated from the operating floor.

New features which are incorporated in the Bailey Thermo Hydraulic Generator, which is located at the boiler water level, are a cold water storage leg, a condensate by-pass and a vacuum seal. The cold water storage leg, together with a large fin area on the generator tube is said to assure rapid condensation of steam in the annular space between the inner and outer generator tubes, which in turn results in positive closing of the regulating valve as the boiler water level tends to rise. Condensate which forms in the connecting piping between the generator and the boiler drum is returned to the boiler by means of the condensate by-pass. This prevents erratic and false operation of the regulating valve which would be caused if the condensate were allowed to drain back to the boiler through the generator. The vacuum seal causes instantaneous closing of the regulating valve in case the boiler water level ever exceeds the upper limit of variation allowed by the generator.

Bailey Thermo Hydraulic Feed Water Regulators will be furnished in all pressure standards up to and including 1350 pounds.

There are no limitations as to where the regulating valve must be installed in the feed line, since only a hydraulic connection is necessary between the sylphon on the regulating valve and the annular space between the tubes of the generator. This connection is made by ⅜" O. D. soft annealed copper tubing as is shown herewith. As will be noted the annular space between the outer and inner generator tubes, the copper tubing and the 4-ply metal bellows or sylphon on the regulating valve, form an allmetal closed system. This system, because of its metal-to-metal ground joints is practically leakproof and seldom, if ever, must be refilled.

Re-Chrome Diaphragm Meter Leather

When gas was first measured as used by the consumer lambskins were adopted by the gas meter manufacturers for meter diaphragms as they were less porous and the more adaptable to the constant wear which the diaphragm is subject to in the expansion and contraction of measuring gas. These lambskins were tanned either in hemlock bark or quebracho. In general they have proved satisfactory. However, there are so many varying conditions in the gas industry, such as water gas, coal gas, natural gas, by-product gas and varying temperatures and basement conditions, that gas meter men have ever been on the alert for a leather which would be an improvement under all these conditions. After many months of experimenting, Basse, Osborn & Odell, Inc., Boston, Mass., have developed a tannage which is proving of great interest to the gas industry. This tannage, which we call a re-chrome tannage, has already been tested out for several years by some of the larger companies and adopted by them. This re-chrome meter leather is made from New Zealand lambskins which are carefully selected for meter leathers, especially with regard to weight, shape of skins and quality. This leather is tanned exclusively and marketed under the special trade mark "ColonialBrand".

There are many advantages in this re-chrome leather over the old bark tanned method, aside from the quality of the skin. The leather, being a re-chrome tannage, has a much stronger fibre and is more flexible, consequently it is easier to fabricate in making up the diaphragm.

Diaphragms made of re-chrome leather are less pervious to water, in fact the simple experiment of a five minute boiling test will easily demonstrate the fact that a piece of bark leather will be all curled and dried; whereas, a piece of re-chrome leather will still retain its natural size and original condition. Very often when a meter is taken in to be overhauled the question arises as to whether the meter was near a furnace or exposed to the dampness and cold from the outside, but if re-chrome leather is used in the diaphragm, one will never have to give this question a thought.

There is another point which is strongly in favor of the re-chrome leather; namely, this leather will absorb more oil in the preparation of the diaphragm before being installed in the meter, because it is less subject to the elements of manufactured gas; such as, water in the gas, and climatic changes. The diaphragm will not dry out or harden and consequently will give longer years of service with more accurate measurement.

New meters equipped with this leather will give longer service and thus effect a great saving in time and labor, as well as more economy in accurate measurement.

Worthington Timken-Equipped Compressors

A new line of compressors, employing Timken roller bearings on the main crank shaft journals, recently has been announced by the Worthington Pump and Machinery Corporation, Harrison, N. J. This is the Worthington single horizontal straight line series. Capacities range from 100 to 300 cu. ft. per minute and, operating at moderate speeds, maintenance charges and attention are said to be almost completely eliminated.

As compressors of this type and capacity usually are used by the smaller power plants, many of which do not have skilled operators, the elimination of bearing adjustments has removed the principal item of worry and expense in the operation of compressors.

Oil rings, which deflect the surplus oil and return it to the crank case, are mounted on the shaft beyond the Timken bearings. A special feature is the design of the crankcase enclosure. This is completely oil tight, and free from oil leaks usually found in equipment of this kind.

"Feather Valves" are standard equipment on these machines, as they are on all Worthington air and gas compressors. These valves are light strips of steel, approximately 1/32 inch thick, which flex when opening against a curved guard to permit the passage of air. They probably are the lightest and simplest air valves in use.

Regulation may be by an automatic starter and pressure switch mounted on the motor, stopping and starting it to control the air pressure between definite limits. Or a pressure regulator may be attached to the compressor inlet valves, holding them open to maintain constant air pressure. Compressors with the latter type of unloader, which bypasses the air back to suction, are claimed never to overheat when unloading.

These compressors can be furnished with ball bearing idlers for short belt drive; with Texrope drives, using V-type ropes; or a synchronous motor may be directly mounted on the compressor crank shaft, thus eliminating transmission mechanism.

A Case Wherein Exemption Was Not Allowed On Bond Income Tax

Other legal happenings of interest to the gas man

By Leo T. Parker

IN Wisconsin Public Service Corporation V Tax Commission of State of Wisconsin, 224 N. W. 130, an interesting situation regarding taxation of public utilities, was presented to the Court for solution.

In this case a Public Service Corporation owned all of the stock and bonds in a public utilities company. Also, the same officers managed each corporation. The Service Company was assessed an income tax upon the *dividends and interest* received by it upon the stock and bonds of the public utilities company.

The Service Corporation contended that it was exempt from the income taxes, because a State law provides that no income taxes shall be paid upon "incomes derived from property and privileges by persons now required by law to pay taxes or license fees directly into the treasury of the state in lieu of taxes, and such persons shall continue to pay taxes and license fees as heretofore."

However, it is interesting to observe that the Court held the dividends and interest derived from the stock and bonds owned by the Public Service Corporation *not* exempt from income taxation, saying:

"Because the plaintiff is a public utility and pays taxes upon property owned by it into the State treasury, it is not for that reason exempt from paying an income tax upon property which is not so assessed . . . . The obvious reason for exempting public utilities from income taxes does not apply to this situation. The rates of public utilities are under the control of the State. All taxes imposed upon them must swell the rates which they are permitted to charge. As a matter of public policy . . . . the income tax law exempts them from the payment of income taxes. But the income tax assessed against the plaintiff would have no influence upon the rates which the Public Utilities Company should be permitted to charge."

Workmen Assume Hazard of Employment

The recent case of Reilly V Philadelphia Suburban Gas & Electric Co., 145 Atl. 576, presents unusually interesting information showing that a gas company is not liable in damages for injuries received by an employe who accepts hazardous work.

In other words, the law compels an employe to assume the natural risks incident to dangerous employment, particularly if he is experienced and realizes the danger.

The facts of the case are that a gas company decided to replace two of its boilers with oil-burning furnaces. In making this change the side walls were removed which left a bridge wall standing in front of one boiler. It had been attached to the side walls by rods, which were left loose, and the removal of a T beam from under the front edge of the bridge wall had also left it less secure. The wall was subjected to vibration from the operation of the plant and from railway cars passing near by. While an employe was laying brick the wall fell and killed him and his dependents sued the gas company for damages.

No evidence was submitted proving the reason the wall fell, but it was shown that the workman was experienced in the work of building walls for boilers. In view of this testimony the Court held the gas company not liable, saying:

"The deceased was a competent brick mason of 13 years experience and was employed several weeks each year around the walls of boilers. In addition, he had for years done work around this plant, and had been employed there off and on during the making of the improvements in question. . . .With full knowledge, full opportunity to know all the conditions, he voluntarily placed himself in a position of danger, as the sequel showed, and thereby assumed the risk. . . .A servant who has had the full opportunity of knowing the danger and risk and makes no complaint to his employer as to the danger to which he is exposed, but continues to work voluntarily notwithstanding, assumes the risk of injury from the danger to which he is exposed."

Gas Company Liable for Damages for Injury Caused by Motor Truck

It is true that injuries caused by the negligent operation of motor trucks often result in allowance of extraordinary damages. For this reason, particularly, gas company officials should exercise more than ordinary care to employ competent drivers, and care should be used to inform this class of employees of their unusual responsibilities.

For illustration, in Kontur V Public Service Electric & Gas Co., 145 Atl. 472, it was disclosed that the owner of a garage was called out with his wrecking car to tow another car that was stalled on the public road at night. He backed his wrecking car up to the other car, and was between the two cars engaged in coupling them, for the purpose of towing the injured car to the repair shop, when suddenly a motor truck owned by a gas company, ran into the rear of the car crushing the garage owner between the two vehicles. He was confined in a hospital for almost a year and presently has little or no use of his legs.

The lower Court held the gas company liable for $19,000 damages and the higher Court sustained this verdict, saying:

"He seems to be out of business permanently, and his earnings have dropped from some $75 a week to $25 a week. The medical and hospital expenses aggregate nearly $2,000. We do not consider the verdict under the circumstances to have been excessive."

Penalty for Breach of Contract Void

Few persons realize that all contracts are void and unenforceable which specify a *penalty* one party must pay the other in the event he breaches the contract This point of the law was discussed in the recent case of Kelly V McDonald, 276 Pac. 404.

The facts of this case are that the owner of real property leased to a man named McDonald 320 acres of land for the purpose of sinking wells thereon. The lease contained a provision to the effect that if McDonald failed to "begin actual operations toward the drilling of a well on or before the expiration of June 30, 1926. . . .he agrees to pay lessors as liquidated damages the sum of $1,000."

McDonald failed to begin drilling before June 30, 1928 and the owner of the property sued to recover $1,000 contending that this amount represented *liquidated* damages he suffered as a result of failure of McDonald to drill the well.

However, it is interesting to observe that the Court held the contract invalid, saying:

"The pleadings in the present case indicate that the appellants considered the stipulated amount as a *penalty,* rather than liquidated damages, for they seem to have assumed the amount would automatically become due as a necessary presumption that damages would inevitably follow a breach of contract. Manifestly, this is not true. Damages may or may not result from the breach of a contract . . . .It has therefore been held that a claim for stipulated damages must be accompanied by appropriate allegations showing that it is impracticable or extremely difficult under the circumstances to estimate actual damages. . . .The provisions of a contract attempting to specify in advance the amount of damages to be paid in the event of a breach thereof are void except that when the circumstances which exist at the time of the execution of the contract make it impracticable or extremely difficult to estimate actual damages."

Therefore, it is quite apparent that contracts of this nature are void unless the amount, specified as liquidated damages, actually represent the approximate damages suffered by the complaining party.

Construction of City Ordinance

In Freding V. City of Minneapolis, 224 N. W. 845, the following city ordinance was before the Court for interpretation:

"The City Council shall require, before any street is paved, that the gas, water

and sewer pipes be laid therein and connection made with the front line of each lot. . . .In the business portions of the city, the word 'lot' shall be construed to mean a subdivision of 22 ft. front."

It was contended that this ordinance made it compulsory for the gas and water companies to make connections of its mains with the front line of each lot before the street was paved.

However, the gas company argued that it was privileged to make the connections at the curb, if it desired.

It is interesting to observe that the Court held the ordinance *not* mandatory, but merely directory, saying:

"We think the above-quoted provision is directory and *not* mandatory. It is not an integral part of the grant of power to pave streets. . . .The purpose must have been to prevent, *as far as reasonably possible*, the necessity of tearing up the pavements for the purpose of making service connections. . . .The city has no power to compel the laying of gas pipes by property owners, nor can either the city or the gas company compel the use of gas."

City Official Allowed Damages for Injuries

Contrary to the opinion of the majority of persons a municipal fire official who at any time, during the day or night, makes a personal investigation to promote public safety in respect to fire hazard, is deemed to be acting within the scope of his employment and is, therefore, entitled to damages for injuries resulting from another's negligence.

For example, in Smith V Twin State Gas & Electric Co., 144 Atl. 783, it was disclosed that the janitor of an apartment building, observing the odor of escaping gas, called a fire chief who was passing the building. The chief went into the basement of the building to make an investigation and an explosion of gas occurred and seriously injured him. He filed suit for damages against the gas company and proved that the leakage resulted from negligence of its employes.

The counsel for the gas company argued that the latter was not responsible for the injuries sustained by the fire chief, because he was making a personal investigation at the janitor's request. However, the Court held the gas company liable, saying:

"Regardless of any duty, prescribed or otherwise, to investigate, as a fire chief in a city of the State, he entered the basement of the building to ascertain if gas was escaping into it. It was an act in the course of his service, such as might reasonably and naturally be expected under the conditions which existed. . . His prescribed duties were not necessarily the full measure of his service, which, from the nature of his office and in the absence of defined limitation, was inclusive of some conduct of discretionary authority. . . .*A fire chief's service includes all legal conduct deemed by him calculated to promote the public safety in respect to the fire hazard.* Exercise of such authority is within the scope of service and within his official power, although failure to exercise it may not be a breach of duty. The conduct was a part of the service and more than incidental to it. . . It is reasonable to say that it is within the implied authority of the janitor of a building, having the duties of care and protection, to admit a fire chief into it to make such an investigation as was here made."

Contract Resulted In Gas Company's Liability

Generally speaking, a municipality is liable in damages for injuries sustained by its citizens as a result of failure to maintain its streets in safe condition.

However, it is important to know that the city may saddle responsibility upon a gas company by including in the franchise contract a provision obligating the latter to assume such responsibilities.

For instance, in the recent case of Community Natural Gas Co. V. Allen, 15 S. W. (2d) 657, it was disclosed that a woman stopped her automobile at the street curb, in front of the home of a friend and in alighting from the car she stepped into an open ditch which was unguarded and unlighted. The ditch was recently dug for the purpose of laying gas pipes. The injured woman filed suit against the gas company contending that its employes were negligent in leaving the excavation open and exposed at nightime, unguarded and unblocked, and without light to warn of the danger.

During the trial it was disclosed that in 1927 the city had granted a franchise to the gas company for the construction and operation of a gas distributing plant, which included the right to lay gas mains and supply pipes in the streets, alleys, and parkways in the city.

It was specially provided in the contract that when the company made excavations in any street, alley, or parkway for the purposes of laying its mains or pipes, "the public shall be protected by barriers and lights placed, erected, and maintained by the grantee (gas company)."

In view of this provision the Court held the gas company liable for the woman's injury, saying:

"The evidence in behalf of appellee (injured woman) goes to show that there was no light, block, or guard of any character around the excavation at the time to warn of the danger. Further, that the night was dark; that appellee did not know excavations were being made by the appellant. The evidence in behalf of the appellant (gas company) goes to show that the street lights shown there; that the automobile of appellee (injured woman) was equipped with headlights."

When Gas Company is Liable for Injury to Employe

Frequently, injured workmen sue gas companies for injuries which they contend resulted from the latter's negligence. However, in none such cases is the gas company liable where the evidence proves conclusively that its negligence was *not* the proximate cause of the injury.

In other words, although the gas company officials are negligent, the company is not liable if the employe was injured as a result of his own carelessness, or that of a fellow employe.

For illustration, in McCain V Trenton Gas & Electric Co., 15 S. W. (2d) 970, the Court stated the following important law:

"It is the positive duty of a master to furnish his servant with reasonably safe instrumentalities wherewith, and places wherein, to do his work . . . It is undisputed that, no matter how free from negligence an injured person may be, he cannot recover damages for personal injuries because of the negligence of another unless such negligence was the proximate cause of the injury. There can be no recovery in such cases without evidence tending to show the facts of negligence and injury and that a casual connection exists between such facts."

When Chattel is Part of Building

The law is well established that where a chattel, as a gas stove, is placed on real property *after* the execution of a mortgage against the real property, *and the chattel is not mentioned in the mortgage*, such chattel is not subject to a lien on the property unless it is so attached that it cannot be removed without injury to the building.

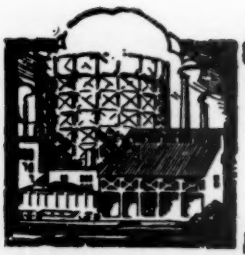
However, chattels which are annexed to the real property *prior* to the execution of a mortgage are subject to the lien, though not mentioned in the mortgage, if the chattels are essential to the real property. This does not mean that any chattel which may be useful about a house becomes a part of the realty, but means that *it must be essential* to the enjoyment of the building. That is, it must be a part of it to such an extent that it cannot be removed *without damaging* the freehold so that its enjoyment will be impaired.

Therefore, it is quite apparent that any personal property placed in a house, in such a manner that its removal will damage the building, cannot be removed by a seller or other person who retains a chattel mortgage on the article, providing a mortgage or other lien is filed on the real property.

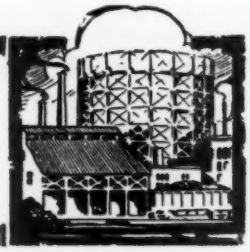
For example, in Electric Shop V Corey-Scheffel Lumber Co., 13 S. W. (2d) 1009, it was disclosed that a company sold a stove to the owner of a building, after a mortgage on the real property was properly recorded, under a contract that the seller retained title to the range until the purchase money should be paid. This contract was a chattel mortgage and was recorded.

Later a mechanic's lien was filed against the building and litigation developed whether the seller of the stove was entitled to remove it from the building to secure the unpaid purchase price.

It is interesting to observe that the Court held the seller entitled to remove the stove, because it is not a legal fixture. This case is particularly important because so many gas companies sell gas equipment.



NEWS OF THE GAS INDUSTRY



Franchise Sought to Serve San Diego County With Natural Gas

According to A. B. Macbeth, President of the Southern California Gas Company, that Company has applied to the Board of Supervisors of San Diego County for a Franchise covering the transportation and sale of natural gas in San Diego County. Application has also been made to the California Railroad Commission for a Certificate of Public Convenience and Necessity to operate under such a franchise.

Negotiations are now being carried on Mr. Macbeth states, between the Southern California Gas Company and San Diego County seeking to permit the former to supply gas at the city limits of La Jolla for distribution by the San Diego Consolidated in La Jolla and San Diego. It is expected that these negotiations will be concluded very soon.

A pipe line from Huntington Beach to La Jolla is contemplated in this plan, and it is probable that natural gas will be supplied along the pipe line to various cities and towns.

General Offices of the Indiana Service Corp. and Northern Indiana Public Service Company Combined

The Utility building, 122 East Wayne street, Fort Wayne, Ind., has been purchased by the Midland Utilities Investment Company for a consideration said to be more than $400,000, from the Mulholland Realty Company. Announcement of the purchase was made by Robert M. Feustel president of the Indiana Service Corporation. The general offices of the Indiana Service Corporation, are to be combined with the Northern Indiana Public Service Company offices in the Utility building. The Indiana Service provides power and the Northern Indiana Public Service provides gas for that territory.

The Midland Utilities Investment Company has purchased the Utility building to combine general offices of the two companies so that the public may be served better and economies affected at the same time.

The Utility building is a four-story modern structure with 75 office rooms. It is designed to carry three additional floors when more space is required. The Indiana Service Corporation and the Northern Indiana Public Service Corporation will occupy a considerable portion of the building when the consolidation of offices is completed.

Convention Calendar

September

10-13 Pacific Coast Gas Association, Annual Meeting, Hotel del Monte, Del Monte, Cal. Clifford Johnstone 44 Sutter Street, San Francisco, Cal., secretary.

October

14-18 American Gas Association, Annual Meeting, Atlantic City, N. J. Alexander Forward, 420 Lexington Avenue, New York City, managing director.

Gas Storage Tank to be Constructed in East Moline, Ill.

The People's Power company East Moline, Ill., has started construction of a $300,000 improvement project here which will include construction of a gas storage tank to supply East Moline and Silvis residents. At the present time gas supply for these two cities comes from Moline direct to the consumer.

Laying New Gas Mains

The Public Utilities Corporation of La Junta is now supplying natural gas to Rocky Ford, Swink and La Junta, Colorado. New mains are being placed throughout La Junta and extensions are to be made to serve some 150 homes in North La Junta.

Franchise Granted

A franchise has been granted the Northern Indiana Gas & Electric Company, which provides gas in Logansport, to run its lines into Royal Center, Ind. There was no objection on the part of citizens to the issuance of the Franchise. The gas will be obtained from the Chicago-Logansport feed line which is within three miles of Royal Center. The franchise requires installation before 1931 but officials of the company said the work should be completed before the coming winter. The rate for gas will be fixed later.

New Gas Line is to Connect South Bend and Michigan City

A gas transmission line, 25 miles in length, running from Michigan City, Ind., to South Bend, was begun on June 1, by the United Engineers and Constructors company, of Philadelphia, operating under a contract with Northern Indiana Public Service Co. The work is to be completed by September 1.

The new line will be the final link in a gas transmission system, 65 miles long, connecting the company's gas distribution center in East Chicago with South Bend. A line running from East Chicago to Tremont is now under way. This will join at Tremont the line which was constructed last summer from Valparaiso to Michigan City. Running from Michigan City to South Bend, the new link will supply New Carlisle.

The new source of supply for the South Bend gas distribution system is made necessary by the rapid increase in the local gas consumption. So large has become the residential and industrial needs the South Bend gas plant could not, of itself, eventually supply the demand. To insure uninterrupted and adequate service in the future, the new line is being built.

National Association of Purchasing Agents Approve Standard Coal Contract Form

A standard coal contract form developed jointly by the National Coal Association and the National Association of Purchasing Agents was formally approved at the Annual Convention of the National Association of Purchasing Agents held in Buffalo early in June in the following resolution:

WHEREAS, it has been firmly established that standardizing business in the United States is the proper procedure in reducing expense to business, and

WHEREAS, the National Association of Purchasing Agents and the National Coal Association, through their Committee have drawn up an equitable standard coal contract for the purpose of elimination of sharp practices, avoidance of controversies and the general establishment of confidence between buyer and seller of coal, and

WHEREAS, the National Coal Association has gone on record as recommending this standard coal contract to the coal companies for use, be it

RESOLVED, that we recommended to the National Association of Purchasing Agents in convention at Buffalo this year, 1929 that we go on record as approving this contract and,

BE IT FURTHER RESOLVED, that we recommend to all Purchasing Agents throughout the United States and Canada to use it in closing their contracts for coal, and

BE IT FURTHER RESOLVED, that a copy of this resolution be broadcast to the members of the National Association of Purchasing Agents and be submitted to the National Coal Association, and

BE IT FURTHER RESOLVED, that our heartiest thanks be extended to the National Coal Association for their splendid cooperation in the accomplishment of what we feel is a very constructive step towards the closer affiliation between buyer and seller of coal.

San Diego Company Opens New District Office

The San Diego Consolidated Gas and Electric company recently opened a new district office at National City, California, according to Wm. F. Raber vice president and general manager of the Company. The office is in charge of Howard Glasgow as district agent.

This is the eighth district office the Company has opened. Other offices are located at Oceanside, Escondido, Coronado, La Jolla, La Mesa, Chula Vista and San Juan Capistrano. The new office is located in a district where the Company serves 10,000 people.

Applications for new gas or electric service are handled in these district offices, as well as all accounting, billing and rate transactions.

New Coke-Oven Plant Supplies Sheffield With Gas

Very great interest has been aroused by the operation of the new coke-oven plant of the Nunnery Colliery Company at Handsworth, Sheffield, Eng. The plant, which is of the Becker type and was the first of its type to be erected in the United Kingdom, is showing excellent results. The carbonizing time of the new regenerative ovens, which have a capacity of 13.7 tons per oven, is 12 hr. 50 min., in comparison with 32 hr. with the waste-heat type of ovens of the old plant. There is now a weekly production of 3,150 tons of coke, 56 tons of sulphate of ammonia, 36,000 gallons of tar, and 14,000 gallons of crude benzol, while 27,000,000 cubic feet of debenzolized gas, with a calorific value of 550 B. Th. U. per cu. ft. are being delivered to the Sheffield Gas Company for lighting and power purposes.

New Gas Building of the Atlanta Gas Light Co. Formally Opened

The new gas building of the Atlanta, Ga., Gas Light Company was formally opened recently.

The building is four stories in height, with a daylight basement, and it has been completely renovated for the use of the company.

Display Floor, Atlanta Gas Light Company

The basement has been outfitted as an experimental and demonstration laboratory, where every sort of an industrial gas appliance has been installed and can be put in operation at a second's notice. Here a wide range of industrial gas apparatus has been put on display.

The first floor has been fitted up as a display room, with booths along one wall for customers wishing to pay bills, apply for gas meters, change meters, or file complaints with the company. Special offices have been arranged at the rear of the floor where those having complaints can talk quietly with an officer of the company.

The second and third floors of the building are devoted to offices for the Southeastern district and for Georgia, as Atlanta will form the headquarters for the company, not only for the state, but for the section as well.

On the top floor is a large auditorium with a stage equipped with all gas appliances.

This auditorium is for the use of women's organizations exclusively.

Natural Gas Pipe Line to be Extended in Northwestern Kansas

The Doherty organization will extend its natural gas pipe line system to a number of cities in northeastern Kansas and as far north as Falls City, Neb. This announcement was made by B. C. Adams.

The line is to be extended north from Atchison, Kas. It will extend in a northwest direction to Horton, Kas., and then practically straight north to Hiawatha and Falls City, Neb. The company also proposes to build a line to Sabetha, Seneca and Marysville, Kas., and this would join the Horton-Hiawatha-Falls City line at a point just north of Hiawatha.

The Cities Service Gas Company has surveyors in the field at the present time, surveying and staking the new line.

The pipe line from which these cities will be served extends to Atchison through Leavenworth from Ottawa, Kas., where it is joined with the company's main net work of pipe line system from all of the major gas fields in the southwest, including the large line extending up through Ottawa from the Texas Panhandle.

Franchises Transferred

The Public Service Commission has consented to the transfer of the franchises, works and system of the Sea Cliff & Glen Cove, L. I. Gas Company to the Long Island Lighting Company and approved the right of the Long Island Company to supply residents of the two villages with gas.

The Sea Cliff & Glen Cove Company has been purchasing its gas from the Public Service Corporation of Long Island.

When this huge gas-illuminated sign was recently turned on it looked so much like a fire that some one sent in a general alarm. The sign attracted much attention and was invented by Charles Leech, manager of the Macon Gas Company

Old Pumping Station Near Kokomo is Made Over Into Children's Health Camp

Once superintended by Elwood Haynes, inventor of the automobile, an old gas pumping station near Kokomo, Ind., now controlled by the Midland Utilities company, has been given over indefinitely to the Tuberculosis association of Kokomo for use as a children's health camp.

The station was built about 37 years ago—at a time when natural gas from the vicinity of Kokomo was being pumped to the Chicago region through the Public Service pipe line.

For many years the station was a thriving center of industry, but with the falling of gas resources, the station became less active until about 10 years ago it was abandoned. Since that time a few families have lived in the station houses, but, in general it has been deserted.

The plot of ground around the station includes 39 acres, much of it bordering on Wildcat creek.

Free Nursing Service Introduced

The Mutual Aid Society of the Westchester Lighting Co., Mt. Vernon, N. Y., has announced the introduction of a free nursing service for the benefit of the employees of the Companies. Through arrangement with the Travelers Insurance Company and various nursing associations, nurses are available in all districts.

Employees who are sick will obtain the services of a nurse in the following manner:

When an employee does not report for duty on account of illness and no request for a doctor has been received, his department head will 'phone the supervising nurse in his district, giving the name and home address of the employee. The nurse will call upon the employee and render any service in her power. If the service of a physician is neded, she will notify the department head, who in turn will send a Society doctor to attend the patient.

The nurse will make as many calls as in her judgment the case requires.

Gas Holder Aviation Sign at Havana, Cuba

The work of identification for the service of aerial navigation has been completed by the painting of the name Havana in letters fifteen feet high on the crown of the largest commercial Holder of the Havana City Gas Plant. Below the name Havana is painted an arrow ninety feet long, with the letter N showing the true northerly direction. The width of each line of the letters and arrow is 2 feet six inches. Havana has thus contributed to the establishment of a world wide system of transportation by air.

The Holder is one hundred fifty-two feet deep in diameter, the crown is painted with aluminum, with the letters and arrow in dull black.

Novel Branch Office Established

The Atlanta, Ga., Gas Light Company has established a branch office and sales room in one of Atlanta's big downtown department stores.

The branch office, which consists of an office proper where customers may pay their gas bills or have their meters changed, and a sales room containing gas refrigerators, gas water heaters and gas ranges, is located on the tourth floor of the department store, adjoining the house furnishings department.

Salesmen from the gas company will be employed in this office, while the department store will devote its attention to the sale of accessories other than gas appliances, it is understood, under the arrangements made.

It is expected that, from the standpoint of the store, 5,000 additional customers a month will be brought in.

Water Gas Machines Supplant Coal Unit

The Illinois Power and Light corporation, Decatur, Ill., recently closed down the coal gas plant which for years has been the chief source of supply of the city's illuminating gas. The coal unit has been supplanted by four water gas machines, one of which is already in service and the other three ready for use. With the closing of the coal gas plant, the Illinois Power Co. goes out of the coke business, a by-product of the plant as soon as the present supply is exhausted.

To Pipe Gas Into Mexico

Plans to invade Mexico with Texas gas was given an impetus recently when contracts were signed by the Moody-Seagraves interests awarding a contract to Smith Brothers Construction Company of Dallas to construct a 12¾-inch pipe line from Jennings gas field in Zapata County to the city of Monterrey, Mexico, a distance of 125 miles.

The line will cross the Rio Grande river at Roma, Texas, and proceed directly to Monterrey. The right-of-way has been secured for the entire length of the line, and much of the way in Mexico has already been prepared for the pipe laying machinery.

The American interests are being handled by the United Gas Company, while a subsidiary company has been formed in Mexico under the name of the Cia. Mexicana de Gas, S. A. to operate in Mexico. Monterrey is the second largest industrial center in the republic and the leading railroad center in the northern part of Mexico.

(Continued on page 69)

THE ONLY ACCURATE BASIS
OF GENERATOR FUEL SELECTION

BOONE-CHILTON

EVERY account in the Operating Expense of a water gas plant is affected by the selection of Generator Coal. Upon such items as Labor, Materials, Supplies and Maintenance the character of generator coal has an important bearing. ¶ Net Holder Cost can be reduced to a minimum only by the selection of a generator coal that combines in the highest degree those qualities which insure lowest cost under *all accounts.*

BOONE-CHILTON Generator Coal
has fulfilled these requirements
in the greatest number
of gas plants.

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GAS COALS
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News of the Gas Industry

(Continued from page 66)

Natural Gas and the Copper Mills

The Anaconda Copper Company at Anaconda, Montana, is using much natural gas in its various plants yet there appears to be a demand for more, the Producers & Refiners Corporation, the Utah Southern Oil Company and the Kinney Coastal Oil Company making preparations to build a 200 mile long natural gas pipe line from the Garland dome in Northwestern Wyoming to Anaconda. Estimated cost, six million dollars.

Gas Brought To El Paso

The advent of gas in the mains of El Paso, Tex., was celebrated with a special program sponsored by the Texas Cities Gas Company, the El Paso Natural Gas Company, and the El Paso Chamber of Commerce. A special beacon 40 feet high, made of four-inch pipe, was used as a special attraction, the flame being lighted with a Roman candle by Mayor R. E. Thomason.

The advent of gas in El Paso will mark a turning point in the industrial growth of the city since there are ample opportunities for industries here with a plentiful fuel supply assured.

Blackstone Valley Gas & Electric Company Won "No Accident Contest"

In the 1928 No Accident Contest held by the National Safety Council, the Woonsocket, R. D. Gas Division of the Blackstone Valley Gas and Electric Com pany was first out of a total of fifty contestannts in the gas field throughout the United States. During 1928, this division did not suffer a single accident of any sort whatever.

Corporation Name Changed

Officials of the Sheridan Gas Oil and Coal Company, of Sheridan, Ind., have filed a decree in circuit court there changing the name of the corporation to the Sheridan Gas Utilities Company.

To Conserve Gas Subject to Demand

The Empire Gas & Fuel Company, recently brought in a gas well in Carson county, Texas, making 5 million cubic feet of gas daily. The well was shut in, the gas to be conserved until wanted by some of the pipe lines getting its supply of gas from that field.

To Purchase Much Gas

The Dixie Gulf Gas Company, a subsidiary of the United Gas Improvement Company, has arranged to purchase from 35 to 75 million cubic feet of natural gas, daily, from the Richland and Monroe fields of Louisiana so as to augment its supply and take care of its fast growing business in many Texas cities in the vicinity of Houston.

Continues Its Expansion Program

The Arkansas Natural Gas Corporation, a subsidiary of the Cities Service Company have purchased the franchises, distribution and pipe line systems of the Moran Corporation of the South, in Caddo, Bossier, Webster, Red River, DeSoto, Claiborne and Union parishes in Louisiana and in Union county, Arkansas.

To Build Large Natural Gas Compressor Station

Construction of what is to be one of the world's largest natrual gas compressor stations at Sterlington, La., has been announced by the Arkansas Louisiana Pipe Line Company, a subsidiary of the Arkansas Natural Gas Corporation.

The compressor will be used in connection with the company's new 100-mile 20-inch pipe line being built from Monroe to Shreveport, and also will be connected with the sixteen-inch line to El Dorado, Arkansas, which was recently acquired by the company.

The cost of the project will be approximately one million dollars. The station will be a 10,000-horsepower unit, but ultimately it will be of 16,000 horsepower.

The compressor will be used to increase a high pressure all along the Shreveport and El Dorado line even on the coldest days of the winter.

The station will be built by the Republic Construction Company of New York. M. J. C. Ferguson, vice president of the Republic company will be in charge of construction.

Personals

David W. Beaman, at a recent meeting of the Board of Directors of the New Bedford, Mass., Gas & Edison Light Company was elected to the position of General Manager.

Paul Clay, who for the past six years has been district manager for the Arkansas Natural Gas Corporation at Pine Bluff, Arkansas, has been promoted to the position of manager for the Texarkana division, of the Cities Service Company.

Mr. Clay will be succeeded at Pine Bluff by F. D. Shanks of El Dorado.

The change became effective July 1. Mr. Clay succeeds J. Redding, who resigned.

E. A. Weston, who has been assistant manager of Public Utilities Consolidated Corporation, in Nogales, Arizona, has recently been appointed district manager to succeed Mr. Thomas Pitts, who has resigned.

A. B. Spencer, for several years a member of the advertising department of the Public Service Company of Colorado, has been made assistant publicity director, with headquarters at Denver.

Joe Dautremont, head of the industrial gas department of the City Gas Company of Norfolk, Va. has recently accepted a position with the Central Public Service Company at Atlanta, Ga.

Alba H. Warren recently resigned from the Stone & Webster organization to accept a position as vice-president and general manager of the Houston Gas & Fuel Company and is now located at Houston, Texas.

Walter H. Burke recently accepted the position of manager of the Minnesota Power & Light Company at Duluth, Minnesota. He was formerly manager of the Southwestern District of the Stone & Webster organization.

R. H. Oppermann was recently appointed librarian of The United Gas Improvement Company, to fill the vacancy caused by the retirement of W. E. Saunders.

Mr. Oppermann had been assistant to librarian. The U. G. I. Library, since July, 1927, and prior to that had been laboratory assistant at the Physical Laboratory, The Philadelphia Gas Works Company, for almost two years.

Morgan Day, an employee of the Missouri Power & Light Company, Mexico, Mo. was recently awarded the Mc Carter Medal for saving the life of a fellow employee, who was overcome by gas while working in a ditch.

Arthur H. Rhubart, Purchasing Agent for the Utica Gas and Electric Company since 1920, assumed new duties as Assistant Purchasing Agent with the New York Power and Light Corporation at Albany recently. Mr. Rhubart first became associated with the Utica Company in 1905. In 1919, he was made Assistant Purchasing Agent, and from 1920 until his recent connection with the New York Power organization, he has been Purchasing Agent for the Utica Company.

Harold E. Norton has recently been appointed sales manager of the Investment Department of the W. B. Foshay Company, Minneapolis, Minn. Mr. Norton was formerly in charge of the Pacific Coast Investment Sales Division with headquarters in San Francisco. He first

joined the Foshay Company in August, 1928, coming from the Empire Gas & Fuel Co., where he was in charge of sales in the Southwest territory.

N. H. Buckstaff has recently been appointed auditor and assistant treasurer of the Northern States Power Company of Wisconsin, succeeding Andrew Cavanaugh, deceased.

Clark Y. McGown, formerly superintendent of the Northern Union Gas Company's Customers' Service Department, has been appointed superintendent of Laboratory and Refrigeration at the 111th Street Laboratory of the Consolidated Gas Company of New York.

R. L. Spiering has recently been put in charge of the New Business Department of the Northern States Power Company, St. Cloud, Minn. Mr. Spiering was formerly with the old St. Cloud Public Service Company, in the capacity of superintendent of the gas plant, which position he held for ten years. Upon leaving St. Cloud, Mr. Spiering was affiliated with the Peoples Minnesota Gas & Electric Corporation at Crookston, for the past thirteen years.

J. E. Galligan was recently promoted from General Foreman to Assistant Superintendent of the Yonkers, N. Y., Works of the Westchester Lighting Company.

Deane W. Lawrence has been appointed Sales Manager of the Interstate Fuel & Light Co., Benton Harbor, Mich.

Ernest Crisp, employed as Retort House Floorman at Station "B," Detroit City Gas Company, led his class in an American Red Cross First Aid examination at Station "B" recently. This class of 22 consisted largely of foremen, mechanics and skilled or semi-skilled labor. Mr. Crisp passed with an average of 98 and attributes his remarkable grade to the interest in and study of the subject.

H. F. Welch, Treasurer of Public Utilities Consolidated Corporation, Minneapolis, Minn., has taken over the duties of the Auditing Department manager, a position formerly held by Mr. E. C. Condit.

A. H. Stack assumed duties recently as Manager, New Business Department, of the Utica Gas and Electric Company. He goes to this position from Albany where he has been assistant to the Executive Vice President of the New York Power and Light Corporation since its formation in 1927.

Mr. Stack has had wide experience in utility operations. Following his college graduation, he took up a two year training course in public utility operation with the Denver Gas and Electric Company, a Doherty organization, after which he was appointed Superintendent of the Ohio Service Company at Coshocton. For five years prior to joining his present organization, he was General Manager of the Warren Electric Light and Power Company of Warren, Pa., a subsidiary of the Penn Public Service Corporation.

W. J. Daniel, gas shop foreman of the Western United Corporation, Murphysboro, Ill., was recently presented with the McCarter Medal and Frank Katzmark, fitter, a certificate, for their work in saving the life of a fellow employee, who was overcome by gas while on duty.

Jane T. Wagner has recently been appointed Acting Director of the Home Service Division of the Consolidated Gas Company of New York. She is a graduate of Iowa State College, Ames, Iowa, spent a summer at the Art Institute, Chicago, and has been working on her Master's Degree in Household Arts at Columbia.

Jane T. Wagner

Robert E. Livingston, Director of Information, Consolidated Gas Company, of New York, recently announced that he will hereafter be located in the Company's Building, 4 Irving Place, New York City.

O. G. Bennett, formerly treasurer of the Northern Westchester Lighting Company and assistant treasurer of the Peekskill Lighting and Railroad Company, recently became manager of the White Plains, N. Y. district of Westchester Lighting Company.

Mr. Bennett succeeds Edwin W. Magee, who was recently promoted to assistant commercial manager and transferred to the company's general office building in Mount Vernon.

Entering the employ of the utility on April 11, 1904, as stenographer in the purchasing agent's office, Mr. Bennett has made rapid advancement and his experience eminently qualified him for the important post to which he has been assigned in White Plains.

L. R. Schreck, formerly chief clerk of the Customers' Relations department in the White Plains District office, has been appointed manager of the Westchester Lighting Company's office in Pleasantville, N. Y. He entered the company's employ on November 8, 1909 as clerk in the Yonkers office, and later served as cashier and chief clerk there. He was subsequently made chief clerk, Customers' Relations, in White Plains.

John J. Kelsh will succeed Mr. Schreck in White Plains.

R. S. Reading, formerly a resident of El Paso, Tex., and more recently associated with the Southern Cities Distributing Company at Texarkana, has returned to El Paso as manager of the El Paso and Juarez distributing properties of the Texas Cities Gas Company. Mr. Reading has had considerable experience in utility operation, having previously been associated with Stone & Webster in El Paso in the development work of the El Paso Electric Company during 1917 and 1918.

John M. Clifton, Field Engineer of the Public Service Company of Northern Illinois, was recently elected President of the Junior Section of the Western Society of Engineers. The Junior Society comprises the younger men of the Society which includes all branches of engineering. The membership of the Junior Section is about 300, and there are approximately 30 Public Service men who are members.

Glenn Hoss, former commercial manager of the Kokomo Ind., Gas and Fuel Company, is now manager of the Peru district of Northern Indiana Public Service Co., and Herman Horstman, former Peru manager, is assistant to T. J. Kelly, of Fort Wayne, general superintendent of the southern division. Both these changes were effective June 1.

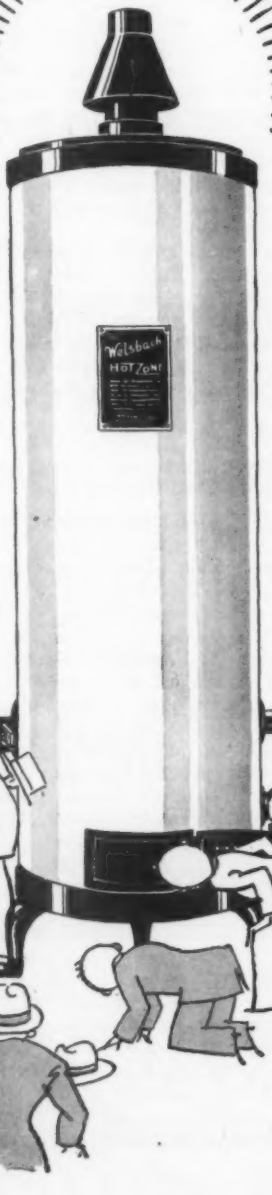
Mr. Hoss had been connected with the Kokomo Gas and Fuel company since 1909. He was made commercial manager in 1917. Mr. Horstman had been manager in Peru since March, 1927. Previous to that time he was superintendent of the Peru gas plant and distribution engineer in Logansport, with headquarters in the latter city.

William G. Peterson, manager of the Mount Vernon, N. Y. district office of the Westchester Lighting Company since January 1, 1925, has been promoted to the position of assistant to the commercial manager. He will be succeeded by Joseph A. Murtha, who for some time has served as chief clerk of the Customers' Relations Department in Mount Vernon. Announcement of these promotions was made recently by President Rosenquest.

Mr. Peterson entered the employ of the Company on May 6, 1906, as a clerk. He advanced through the positions of application clerk, assistant chief clerk, chief clerk, and assistant superintendent, and on February 1, 1924, became superintendent of

(Continued on Page 72)

MAY SHIPMENTS LARGEST IN HISTORY



MAY put a new and higher peak to the constantly increasing sales of Hotzone Gas Water Heaters. And all these sales were to Gas Companies, *including four of the largest in the country who, from the very first have sold — and are still selling — Hotzone exclusively!*

Hotzone is a fine water heater backed by the great name of Welsbach. It provides every service required of a water heater, all at a price within the reach of the average consumer. Long association with Gas Company requirements assures from Welsbach the kind of attention and promptness of shipments which help sales to grow. Welsbach Co., Gloucester City, N. J.

Member American Gas Association

Personals

(Continued from page 70)

customers' accounts. He was made manager of the Mount Vernon district the following year.

Mr. Murtha, who is the new manager of the Mount Vernon district, entered the employ of the Company as assistant bookkeeper on June 16, 1906. He, too, made excellent progress and since January 26, 1924, has served as chief clerk in several departments.

Obituary

Charles A. Learned

Charles A. Learned, for many years general manager of the Meriden Gas and the Meriden Electric Light Company, and since their absorption by the Connecticut Light & Power company manager of the Meriden district of that concern, one of the best known gas engineers in the East, died June 25th in Meriden, Conn. at his home, after an illness of several months duration.

Mr. Learned was born in Watertown, Mass., on September 18, 1863. After finishing his studies in the public schools of that town, he became associated with his older brother, Waldo A. Learned, who was head of the Newton and Watertown Gas Light company. There he remained for several years, acquiring a knowledge of the gas business.

He next entered the employ of the Thompson-Houston Electric company in Lynn, Mass., where he remained until the late 80's, when he went to Jersey City, N. J., to take charge of the electric plant of the United Gas Improvement company in that city. He remained there until 1896, when he came to Meriden as superintendent of the Meriden Gas and Electric Light companies.

He became a power among gas and electric men, and became an acknowledged expert in the manufacture of gas, so that his papers were read before conventions of gas company managers all over the East, and his plant in Meriden was one of the models for New England.

He was one of the "original thirteen" gas men who formed the National Commercial Gas association, which is now the American Gas association. At the time of his death he was treasurer of the State Gas and State Electric associations, positions he held for more than twenty years. He was asked to become president of the National Gas association in 1915, but he declined the honor because of the press of personal business, which did not permit him time to devote to that office.

In addition to his connection with the Connecticut Light & Power company, Mr. Learned was a director of the First National Bank.

Trade News and Construction

United Engineers & Constructors, Inc., Activities

Philadelphia Suburban-Counties Gas & Electric Company has contracted for two Benzol Tower Scrubbers at the Chester, Pa., plant. Each of these scrubbers will have a capacity of 8,000,000 cu. ft. per 24 hours. The order also includes 16" and 24" welded steel connections, pumps and small piping.

In addition to the Mechanical Generator which is being installed at the plant of Consumers Gas Company, Reading, Pa., they have also placed orders for a Steam Jet Conveyor for handling ashes from the Mechanical Generator.

The Nashville, Tenn., Gas & Heating Company has authorized The U. G. I. Contracting Company, to furnish, deliver and install Compressor and Aftercooler equipment in their plant. The unit still consist of a gas compressor capable of delivering 2,500,000 cu. ft. of gas per hour at 15# per sq. in. pressure. The Aftercooler will be of such size as will take care of this demand.

Contract has been received from Northern Indiana Public Service Company, Hammond, Ind., to furnish, deliver and install approximately 35 miles of 10" welded steel transmission main. This main will run from Michigan City to South Bend, Indiana.

$35,000,000 Employee Group Insurance Taken by Consolidation Coal Company

The Consolidation Coal Company, through its President, George J. Anderson, has announced that approximately ten thousand of its employees will receive Group Life Insurance protection through a $35,000,000 program underwritten by the Equitable Life Assurance Society of the United States. This extensive program covers the employees not only of the parent Company but of seven subsidiary organizations located throughout West Virginia, Maryland, Kentucky, and Pennsylvania; i. e., the Fairmont Supply Company, the Fairmont Mining Machinery Company, the Dull Mercantile Company, the Consolidation Coal Realty Company, the Cumberland and Pennsylvania Railroad Company, the North Western Fuel Company and the Monongah Service Company. In addition to the death benefit included in this huge contract, provision has also been made for the payment of stipulated sums to those employees who are totally disabled for a temporary period as a result of illness or accident. An outstanding advantage of this protection is the fact that no medical examination of any sort is required. The cost of this insurance protection to the individual employee is extremely low, since the Consolidation Coal Company, itself, has agreed to pay a substantial part of the premiums. By a special arrangement with the Equitable the parent Company has made it possible for the local managers of the Company to pay claims through the Company's headquarters, thus saving considerable time.

The popularity of the plan is evidenced by the fact that over 95% of the employees applied for the insurance in less than three weeks after the offer was made.

Scientific Heater Co. Issues Book on Drying

The Scientific Heater Co., Cleveland, Ohio, has recently issued a book entitled "Scientific Drying".

This book covers the entire subject of laundry dryers giving the gas man everything he needs to know about drying. The fundamental principles of correct laundry drying are explained, all types of dryers are described with plenty of illustrations, the advantages of dryers in homes are set forth, simple, practical instructions are given upon how to select the right type and size of dryer for any home or institution, large or small. Drawings, tables, etc. complete the data. The book also features such new developments in drying as motor fan air circulation and thermostatic control of drying temperature, moth elimination, deodorizing, rejuvenation, sterilization, etc. The field of gas, electric and steam operated dryers is covered.

The book comprises twenty 8½ x 11" pages with handsome, durable cover. The type is modern and easily readable. The subject matter is well arranged and interestingly written. Copies will be mailed gratis to any gas company officials.

As the interest in clothes drying is rapidly increasing among gas companies, this publication is timely.

Time-O-Stat Controls Company Increases Personnel

The Time-O-Stat Controls Company of Elkhart, Indiana, manufacturers of automatic controls, announces an increase in personnel in line with the recent merger of the Absolute Con-Tac-Tor Corporation of Elkhart, Indiana. Time-O-Stat Corporation of Milwaukee, Wisconsin, Leachwood Company of Janesville, Wisconsin and the Cramblet Engineering Corporation, also of Milwaukee.

Henry S. Wright, of Chicago, has been appointed Vice President and Asst. General Manager of the new company. Mr. Wright will be in general charge of the establishing and contacting of distributors of the company. His many years of merchandising experience well qualifies him to carry forward the important duties of his position in the development of an adequate distribution for the automatic con-

(Continued on page 74)

"COLONIAL" Brand
Re-Chrome Meter Leather

8 LOGICAL REASONS
showing advantages of "COLONIAL—Re-Chrome" over bark-tanned leather

BESSE, OSBORN & ODELL INC. · COLONIAL BRAND · BOSTON, U.S.A. · RE-CHROME METER LEATHER

1 Longer years service, hence less repairs.

2 More accurate measurement of gas. Eliminating slow and fast meters.

3 More impervious to water. Will stand a five minute boiling test.

4 Greater resistance to heat and climatic changes.

5 Stronger fibre, makes it more durable.

6 Absorbs more oil, less likely to dry out and harden.

7 More flexible, easier to fabricate, sew and crimp.

8 Eliminates "floppy" diaphragms.

This trade-mark, stamped on each New Zealand Lamb skin, is our guarantee to you that each skin has received the greatest care in its selection and tanning.

In use by some of the Largest Gas Companies in the country

We will be pleased to submit sample

BESSE, OSBORN & ODELL, INC.
51 SOUTH STREET - BOSTON, MASS.

New York—177 William Street
W. A. Smith—G. Norman Bankart, Representatives.

Tanneries: Clinton, Me. *and* Peabody, Mass.

Trade News

(Continued from page 72)

trols manufactured by this new company.

J. C. Henry, connected with the Cities Service group for a number of years will act as contact man in the gas burner division of the new company in the middle west and western states contacting public utilities. He is well known in the field throughout the mid-western and western states and is well fitted by experience to fulfill his new duties.

New Linde Air Products Plant

A new plant of The Linde Air Products Company, located at 2603 Floyd Street, Louisville, Ky., started on May 29th producing oxygen to supply the local demand.

Mr. Frye is superintendent of the new plant and W. L. Potts, whose headquarters are at the Cincinnati Linde plant, is district superintendent.

Two other new plants were also established, one at 1000 W. Washington Avenue, Oklahoma City, Okla. and the other at 150 Stockton St., Jacksonville, Fla. Mr. F. K. Buckalew is Superintendent of the Oklahoma City plant and Mr. E. H. Blount is Superintendent of the Jacksonville plant.

The Joy Campaign

The above is the title of a sales campaign book just issued by the Rund Manufacturing Company, Pittsburgh, Pa. The idea is that in selling water heaters the machines' service should be stressed more than water heater mechanics so that the prospective purchaser would visualize the sunny side of perfect hot water service.

The "Joy Campaign" was started last year and met with success. The present book is "Joy" the second. It tells how to start the campaign in the company organization to make each employee a prospect hunter. It describes all of the "Joy" literature, mailing cards, window display and newspaper advertising copy. There are also two books for salesmen, one the "Demonstration" book and one the "Pictorial Index", showing points of automatic gas heated water. A copy will be mailed on request.

Consolidated Ashcroft Hancock Co., Inc., Announce Change in Address

Consolidated Ashcroft Hancock Company, Inc., announce the change in address of their general sales offices from New York to Bridgeport, Conn., effective July 1st.

Mr. G. A. Binz has been appointed Assistant to the Vice President in direct charge of Industrial Sales Research.

Mr. W. P. Bradbury has been appointed General Sales Manager.

Mr. N. B. Carlton has been appointed Western Sales Manager, to be located at Chicago.

American Stove Company's Attractive Advertising Helps

The American Stove Company's head office at Lorain, O., recently issued the Lorain Sales Almanac, which is a portfolio showing reproductions of the advertising copy in colors to be run in magazines of national circulation through the first half of 1929. This portfolio was mailed to all their dealers and with it went a direction sheet on a window display. A reproduction of the window display is shown.

In addition to the reproduction of two color advertisements, the portfolio includes a number of attractive advertisements for use in daily papers by their distributors.

Semet-Solvay Engineering Corporation Contracts

The Wisconsin Public Service Corporation, Sheboygan, Wis., has placed an order for condensing and scrubbing apparatus required for the new gas plant it is erecting in this city. The equipment includes a primary condensor and an intensive scrubber and such pumps and other auxiliary equipment as will be required for operation. Valves ranging in size from 4" to 20", will also be furnished.

The Ford Motor Company, Dearborn, Mich., has placed an order for 15 stacks of cooling coils. The stacks will be 40 pipes high and of a type similar to a previous installation.

The Pawtucket, R. I., Gas Company has ordered a quantity of boltless type purifier trays for the purifier at its Tidewater street plant.

The Central Illinois Light Company, Peoria, Ill., has ordered a 5,000 gallon deemulsifier. The installation will dehydrate water gas emulsions produced in the gas making process, separating the tar to merchantable standards.

The Hagerstown Md., Light & Heat Company has placed an order for a two compartment purifier. It will be of welded steel construction and equipped with an overhead trolley for handling the oxide doors. Two layers of the Semet-Solvay Engineering Corporation's new type of boltless purifier trays will be furnished.

Order has been placed for piping required for the gas plant under construction by the General Oil Gas Company at Windsor, Ont. The pipe ranges in size from 4" to 20". The order also includes the valves required for the plant.

The Atlantic Refining Company, Philadelphia, Pa., has ordered 7 stacks of cooling coils. The tubes are to be made of admiralty metal. Sherardized welded steel headers will be provided, also distributing trough and leveling screws to control the flow of cooling water.

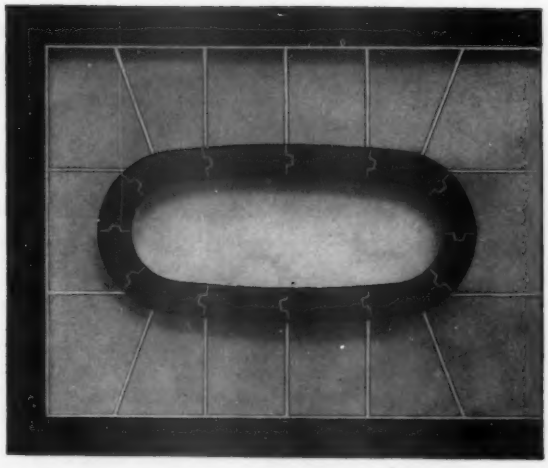
Gas Machinery Company Awarded Contract for Water Gas Plant Equipment to be Erected at Fulford, Fla.—Other Contracts Received

The United Gas Utilities, Incorporated, of Baltimore, have placed an order for water gas plant equipment to be erected at Fulford, Florida. Gas will be supplied from this plant to Miami Beach and other rapidly developing sections in this vicinity.

Included in the contract are two 8'-0" standard water gas sets complete with blast apparatus, oil feed system, charging floor, fuel charging apparatus, cooling scrubber, cooling coils, pumps and piping, water gas tar washer, two rectangular welded steel purifiers, each 20' x 25' x 12' deep with gas manifold, station

(Continued on page 76)

GLOVER-WEST *Vertical Retorts*



The Retort

Constructed of the best silica materials, perfectly molded, elliptical in cross section.

The arch-like shape of the retort walls gives the retort a natural rigidity, rendering stays unnecessary.

Further, the retort in section possesses no sharp corners across which the charge would "bridge" or "arch over."

Consequently all classes of coal pass evenly down the retort without sticking or hanging up.

WEST GAS IMPROVEMENT CO.

Builders of Coal Gas Plants

441 Lexington Ave. **New York**

Trade News

(Continued from page 74)

meter, tar and liquor circulating system, gas piping between the various units, also steam and water piping.

The plant is scheduled for completion this fall, and gas mains are now being laid in the district to be supplied.

The Southern Public Service Company have placed an order for refilling four benches of stop-end sixes in the gas plant at Greensboro, N. C.

The benches will be completely renewed from ash pan up, and the contract also includes repairs to the chimney serving these benches.

A Tar Dehydrator is to be erected for the Illinois Power & Light Corporation in their plant at Centralia, Illinois.

The design of this equipment is similar to dehydrators being installed by the Cleveland concern in several other plants.

In operation it is intermittent.

Contract has been awarded for furnishing and erecting a six foot water gas machine in the gas plant of the Public Service Company of Northern Illinois at Kankakee, Illinois.

This is practically a duplicate of the set furnished by The Gas Machinery Company in 1925, and only differs with respect to improved designs which are incorporated in the present day designs of the Contractor.

The Central Indiana Gas Company with general offices in Muncie, Ind. have contracted for a 9' carbureted water gas set in their gas plant at Anderson, Ind.

This set will be completely hydraulically operated and automatically controlled and includes the special connection between the generator and carburetor.

The offtake from the generator enters into an angle connection, which is provided with a dust pot, and the gases from the generator pass from this angle connection into a goose neck connection so as to enter directly into the top of the carburetor.

With this connection the amount of blown over fuel to the carburetor is materially reduced and more than twice as much breeze is recovered from the ashpot in the angle connection than in sets where the gases enter the carburetor from the side.

With the water gas set is being provided an enclosed pressure system for operating the hydraulic valves, operating floor and blast apparatus.

The Central Indiana Gas Company is constructing a new building in which the set will be housed with fuel elevating and conveying machinery and overhead fuel bin so designed that fuel may be supplied from the bin either to the water gas set or to the new steam boiler plant.

The boilers are water tube type and provided with stokers.

The Southern Public Utilities Company of Charlotte, N. C. have contracted for refilling three benches of inclined sixes from the ash pan up.

The original installation of inclines at Charlotte was made by The Gas Machinery Company about 18 years ago.

Koppers Construction Company to Construct Addition to By-Product Coke Plant in South Chicago, Ill.

The Wisconsin Steel Company has contracted with the Koppers Construction Company for the design and construction of an addition to its by-product coke plant at South Chicago, Illinois.

This work will include forty-five Becker Type Ovens suitable for underfiring with blast furnace gas. These ovens will have a carbonizing capacity of over 180,000 tons of coal per year. The work will include altering and enlarging Benzol and By-Product Plants.

General Refractories Company Move Cleveland and Buffalo Offices

The General Refractories Company recently moved their Cleveland, Ohio, offices to 1126 Leader Building. Their Buffalo address has also been changed to 1210 Genesee Building, Buffalo, New York.

American Meter Company Holds Engineering and Sales Conference

The executive and sales personnel of American Meter Company assembled recently at the Metric Metal Works Division, Erie, Pa., for a three day conference devoted to developments in Gas Measurement and to the consideration of practical methods for making sales and engineering service increasingly effective.

Several sessions were devoted to a study of the progress which has resulted from research at the Erie Laboratory in connection with measurement by orifice. Particular attention was given to the integrated orifice measurement achieved in the Linderman meter. Investigations which have been carried on by the Company in the field of displacement measurement were also presented. Certain phases of these investigations have been concluded, while others are still in process of development.

Present plans for a progressive extension of experimental facilities were fully authorized and approved at the conference.

It is now established that experimental work relating to high pressure measurement by Iron Case or Orifice Meters will be concentrated at the Erie Laboratory.

At the D. McDonald & Co. Division in Albany, a considerable extension in Laboratory facilities will make possible the centering of all problems relating to displacement measurement by Tinned Steel Case Meters. Experimental work on diaphragms and in apparatus for the testing of gases and meters will also be continued in this Laboratory on a larger scale than previously attempted.

The work of these two Laboratories will be closely coordinated so that the experimental requirements of American Motor Company factories may be served in an effective and practical manner.

Henry J. Mandel Now General Sales Manager Columbia Burner Company

Following a connection of several years with the Surface Combustion Company's house heating division in the development and sale of their equipment and more recently as District Sales Manager, Henry J. Mandel has resigned his position with the above company, effective June 15th, and is now associated with the Columbia Burner Company of Toledo, Ohio, as general sales manage. in charge of both House Heating and Industrial divisions.

Mr. Mandel, since assuming his new position, has begun the organization of a selling force which will be operating in all parts of the country within a few weeks.

Other executives of the Columbia Burner Company are Ernest A. Hall, president, Geo. A. Powers, secretary and treasurer, Gordon Burns, development engineer.

Rissberger Appointed Chairman of A. G. A. Committee on Education of Gas Company Employees

Oscar H. Fogg, President of the American Gas Association, has announced the appointment of A. C. Rissberger, of the Rochester Gas & Electric Corp., Rochester, N. Y., as chairman of the Association's Committee on Education of Gas Company Employees.

Mr. Rissberger was born in Butte, Montana. His technical education was received in the University of Michigan, from which he graduated in 1913 with the degree of B. S. in Electrical Engineering. Soon thereafter he entered the engineering department of the present Rochester Gas and Electric Corp., and after several years in the engineering and industrial sales departments, he became assistant director of company work which now includes personnel, safety, educational, public speaking, and allied functions. During the war, in 1918, he acted as manager of the central employment department which was established to procure labor and help stabilize labor conditions in about sixty Rochester manufacturing and munition plants on war work. He is active in the local Chamber of Commerce and other civic bodies including the educational institutions.

Death of Fred W. Freese

Fred W. Freese, prominent gas engineer, died recently at his home in Chicago at the age of 67.

Mr. Freese was very active in the gas industry, having built and owned plants in Albion, Michigan and Bloomington, Indiana. He later disposed of these plants and devoted his time to the erection of gas plants throughout the country. Just prior to his last illness Mr. Freese had started the erection of a gas plant at Sterling, Colo.

(Continued on page 78)

HOT WATER SERVICE THAT'S RIGHT.....

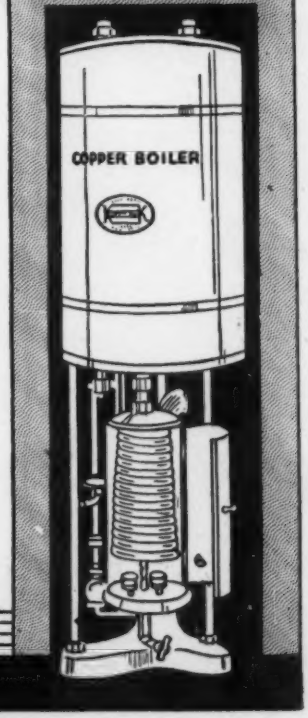
KOMPAK

Without any if's, and's or but's, Kompak's makers stand right back of every sale. You get complete, full and satisfactory automatic hot water service . . . or . . . it's no sale.

Such unparalleled assurance is possible for the plain reason that the Kompak principle is RIGHT! There's not a single accident or lucky hunch in Kompak's construction. And because there isn't, Kompak is complete master of every problem in furnishing a more than adequate hot water supply with utter safety.

As for material, Kompak is guaranteed against defects of any kind for two years. But actually no Kompak need be expected to wear out. For water simply has no effect on copper, bronze or brass, the only three metals used in Kompak's tank, coils and piping.

Learn more about Kompak before buying any automatic water heater



THE KOMPAK COMPANY
NEW BRUNSWICK, N. J.

Death of Fred W. Freese

(Continued from page 76)

He leaves a widow and a daughter, Mrs. L. Earl Thompson, of La Mars, Iowa, as well as two brothers and two sisters.

Mr. Freese was prominent in the Methodist Church and Odd Fellows and was very active in Masonic circles.

Correction

In the Home Incinerator Company advertisement, pages 56 and 57, June 1929 issue, American Gas Journal, the last line on page 56 should read; "Goder designed step-grate Incinerators," instead of " Goder designed step-grade Incinerators."

New England Regional Gas Sales Conference

THE Fifth New England Gas Sales Conference sponsored by the Commercial Section of the American Gas Association and the Sales Division of the New England Gas Association was held at Marblehead, Mass., June 21-22. The Conference was well attended and through the papers and addresses presented was instrumental in throwing considerable additional light on the subject of increasing domestic sales.

J. H. Sumner, Cambridge, Mass., Gas Light Company, served as Chairman of the Conference.

Thomas E. Orr, Copper and Brass Research Association, New York, in his paper, "Merchandising Follow-Up in Co-operative Advertising Campaigns," told of the efforts and success of his association in making builders, architects and the public brass and copper conscious. Many of his remarks contained worthwhile pointers for the gas industry.

Touching upon the subject of Gas Mr. Orr said:

"You, too, have a good product and a favorably-known product. Speaking from outside your industry, I can not picture a world without the service and convenience of gas. It has been indispensable in every home that I can recall during my entire lifetime. I am sure the public regards it as a reliable flexible, simple, easily understood, and economical servant wherever used.

"Without presuming to advise men who, I appreciate, know more about gas and its possibilities than I can ever know, let me suggest that one way to increase the consumption of any product is to acquaint the public with every use to which it can be applied.

"All houses in existence, and every house in prospect, so far as I am aware, require to be piped for gas for some use. You have the entree with your product to the homes of the nation. Show the people in these homes everything which gas will do to contribute to their comfort and convenience and they will use more gas.

"Cooperative advertising, alone, will not do the whole job. Cooperative effort is also necessary. For one thing, we find that specific leads must be followed to sell the product to potential consumers and that is the work of the producing members of the association."

"Commercial and Restaurant Competition" was the title of a paper read by H. O. King, New England Representative, Standard Gas Equipment Corporation, New York.

This paper brought out that the hotel, restaurant and bakery load has been overlooked and further that this business is profitable, uses gas at off-peak hours, requires but little additional equipment and can be sold without price concessions as far as the rate per M is concerned.

Mr. King cited two cases, one a restaurant and the other a hotel, where gas showed a substantial saving over coal, with the average of gas at $1.00 per M in the particular city. He further showed the value of servicing hotel and restaurant equipment. Gas companies were also advised to cooperate with hotel supply houses as many of these write the equipment specifications for new hotels and restaurants.

An excellent paper, "The Use of Direct Mail in Gas Company Advertising," was read by Henry Obermeyer, Assistant to Vice-President, Consolidated Gas Company of New-York. This paper will be found in full elsewhere in this issue.

Other papers presented included "Some New Phases of Electrical Competition," by Roger G. Mosscrop, Public Service Company of New Hampshire, Manchester, N. H. and "The Newer Domestic Uses for Gas—The Home Laundry," by James E. Trainer, W. E. Lamneck Company, Columbus, Ohio.

Mr. Trainer stated that the sale of a water heater or range meant little or nothing if it were not being used.

"The sale of any medium of application," said Mr. Trainer "is only the start of a sale that is continuous—that has no definite limitation—continuous selling of the gas that goes through that medium—continuous selling of every service and every influence that will bring about more frequent use of that medium; with an increasing sale of gas for the gas company and a greater return to the customer on the investment.

"Theoretically, a sale can only be considered closed and finished when the medium of application is being used twenty-four hours a day, three hundred and sixty-five days a year. Does that sound foolish? Maybe so—most theories do—at first, but if we are going to shoot, I believe in shooting the works."

Touching upon the matter of laundry equipment he brought out that "figures of last year's Committee tell us that in a home of four people, where the washing is done at home forty weeks in the year, a complete gas heated laundry unit of washer, dryer and ironer, will give a load of not less than eleven thousand feet per year. Coupled with the load from the water heater we have a minimum laundry load of seventeen thousand cubic feet per year, from every family of four people, in whose home the washing is done forty weeks per year.

"These figures refer only to private homes, no information is yet available covering the very many semi-domestic institutions, where laundry work is necessary, but not such as to demand heavy duty equipment.

"Is that load worth while? I say it is worth while, whether it is seventeen thousand cubic feet or seventeen cubic feet, because of the controlling position the laundry holds in the domestic load scheme.

"The laundry controls the maximum use of every domestic application for gas, because it fixes at least one day each week when the home *must* be used. Fighting to keep the laundry at home is taking out insurance on the load of every domestic application for gas, including house heating.

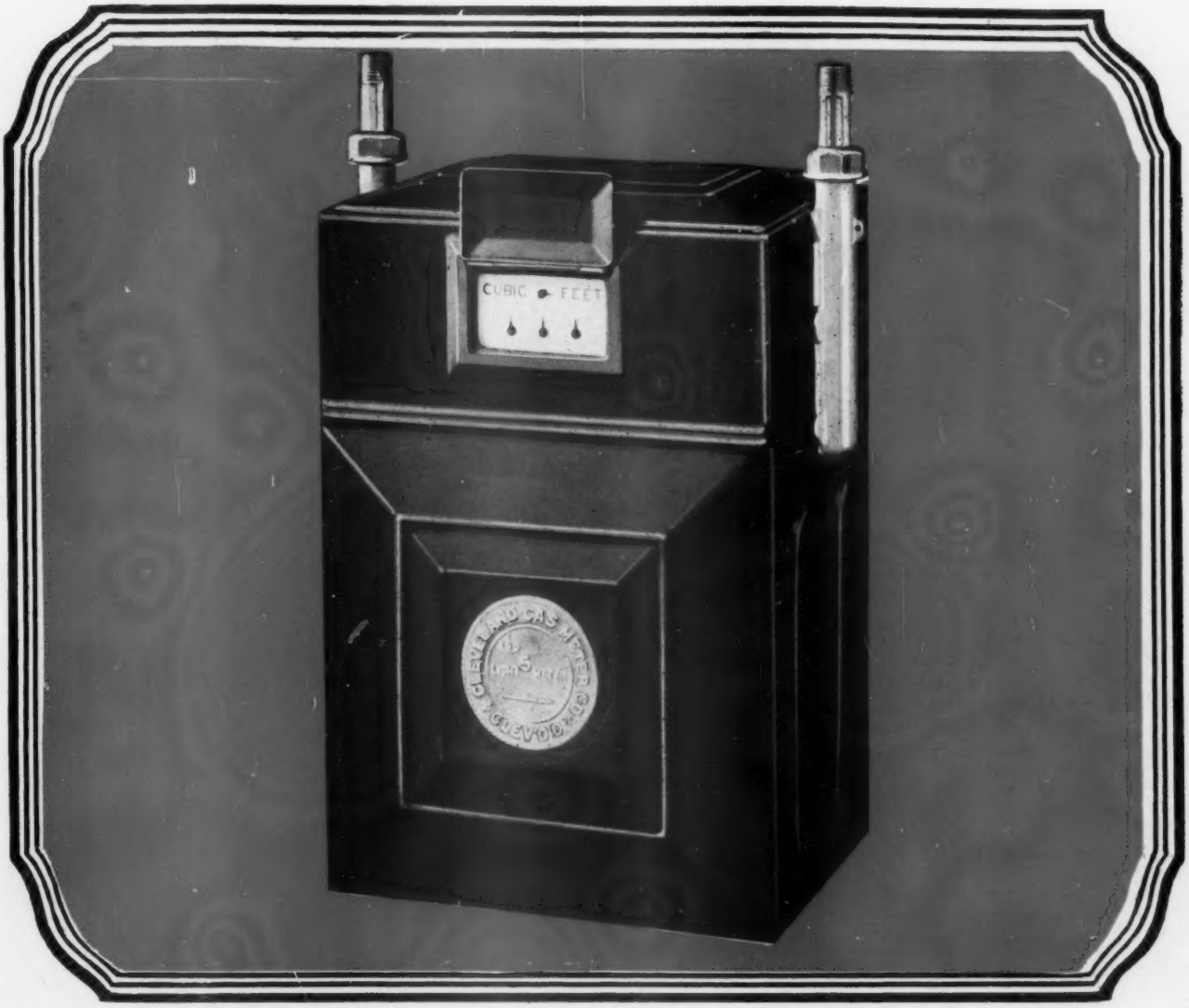
"Placing the complete laundry unit in a home gives a direct additional load of not less than eleven thousand cubic feet per year. Doesn't it seem absurd to even entertain the thought that Gas would pass up a direct load of not less than eleven thousand cubic feet as compensation for saving six thousand cubic feet of the water heater load, and insuring an, as yet, undetermined load from every other domestic application?"

The New England Home Service Directors held their meeting in connection with the Regional Gas Sales Conference. The Home Service Directors were addressed by Miss Dorothy B. Marsh of the Good Housekeeping Institute, New York, on "Appliance Research," and R. L. Hallock, Refrigeration Division Brooklyn Union Gas Company, on "Gas Refrigeration."

These talks were to the point and of considerable value to the full attendance of Home Service Directors.

The social features of the Conference were well planned and were entered into by a large number of those present.

(Convention News continued on page 81)



Cleveland Gas Meters have a reputation for dependable service, the result of over thirty years' experience in manufacturing.

Our thoroughly organized and completely equipped factory assure you that the workmanship, materials, accuracy and general efficiency are unequaled.

"A" Type Meters "B" Type Meters

THE CLEVELAND GAS METER COMPANY

2168-2180 East 65th Street **Cleveland, Ohio**

SELLING GAS FOR COOKING

IN the Research Kitchen of American Stove Company are prepared the famous Lorain Time and Temperature Recipes which have been distributed by the millions to the four corners of the earth.

Here, also, is created the much-appreciated "Bulletin" issued to over 8600 schools and teachers of cookery throughout the United States.

Here, also, is edited "Lorain Cooking," a cloth-bound cook book that is given to every purchaser of a Red Wheel Gas Range.

In addition, Miss Shank is a frequent contributor of articles on Time and Temperature Cookery to the great national publications.

"Magic Chef," American Stove Company's monthly dealer magazine, carries an article by Miss Shank in each issue for the benefit of home service departments and those who sell Red Wheel Gas Ranges.

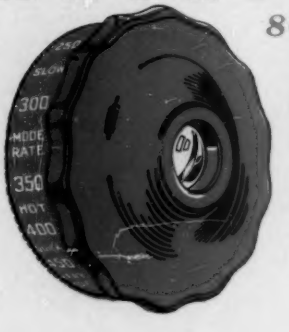
Since the establishment of the Research Kitchen it has been visited by practically every outstanding Domestic Science authority in the United States.

Truly this *is* the home of "cook with gas" propaganda—propaganda that is unselfish and helpful to all who sell or use gas and Red Wheel Gas Ranges.

AMERICAN STOVE COMPANY

801 Chouteau Avenue • • • St. Louis, Mo.

LARGEST MAKERS OF GAS RANGES IN THE WORLD



LORAIN RED WHEEL

These are the Six Famous Brands of Red Wheel Gas Ranges:

DANGLER · CLARK JEWEL · QUICK MEAL
DIRECT ACTION · NEW PROCESS · RELIABLE

Important Technical Papers Feature Canadian Gas Association Meeting

THE Twenty-Second Annual Convention, Canadian Gas Association, held at Ottawa, June 13-14, was quite up to the previous high standard, both from the standpoint of those in attendance and the quality of the papers presented. A number of prominent gas men from the States who were present included Col. Oscar H. Fogg, C. J. Ramsburg, Alfred Forstall, F. J. Kennedy and R. M. Conner.

In his retiring address President Frank Elcock stated in part that "there appears to be a too general impression amongst the public and some of our press representatives, that the gas industry is declining, to those of our Members who are inclined to this belief, I would draw to the their attention the following Canadian statitstics:

Year.	No. plants	Capital Invested
1923	50	$66,021,000
1927	48	$88,811,000
		34%

Number Employees	Salaries & Wages	Cost. Materials
3,619	$4,644,000	$20,461
4,145	$5,869,000	$10,615
14.5%	26.3%	48

	Selling Price of Products by	Value added manufacture
1923.	$33,506,000	$13,044,000
1927.	$34,045,000	$17,430,000
	1.01%	33.6%

Such statistics will bear close examination and enable us to discard any pessimistic tendencies and refute any remarks or statements which may be printed."

The present status of the low temperature systems of carbonization was ably handled by B. F. Haanel, Chief of Division, Fuels and Fuel Testing, Bureau of Mines, Ottawa, Ontario. Mr. Haanel gave an excellent account of his trip to Europe last year, and the results of his inspection of some of the most outstanding low temperature plants were brought out. Considerable attention is being paid to this question by the Canadian Government, with the idea of working out some system that would take care of much of the coal located in Canada that cannot very well fit into the high temperature process.

C. J. Ramsburg, Vice-President, Koppers Company, Pittsburgh, Pa., read a very convincing paper on the subject of Gas Dehydration prepared by the Research Division of Koppers Company. This paper went on to discuss the effect of wet gas on the distribution system and the consumers' meters and outlined the advantages of dehydration.

How the gas department of Halifax, N. S., located much of its unaccounted for gas, was described in a paper by K. L. Dawson, Sup't. Gas Department, Nova Scotia Light & Power Co., Ltd., Halifax, N. S. Mr. Dawson's paper was entitled, "Actual Leakage—Quantities and Efforts to Reduce at Halifax, Nova Scotia".

A paper that could not but be of inestimable value to Companies interested in Home Service work, was that prepared and delivered by Miss M. P. Richardson, Sup't. of Home Service, Ottawa Gas Company, Ottawa. Miss Richardson gave a very able description of the successful Home Service Department of the Ottawa company, and by means of illustrations of all the various things carried on by her division, showed how a department of this kind can be made successful. Miss Richardson delivered her paper in the Home Service Auditorium of the Ottawa Gas Company, the General Sessions of the Association of gas men being also held in the same hall.

How Montreal is being laid out for an efficient high-pressure gas system in order to cope with the increasing gas demands of that City, was very well told by Mr. D. O. Wing, Ass't-Superintendent of Gas Distribution for the Montreal Light, Heat & Power Co. Montreal. Mr. Wing's paper was entitled, "High Pressure Gas Distribution in Montreal".

"Credits and Collections," by E. W. Brown, Supt., Investigation and Collection Dept., Consumers Gas Company, of Toronto, furnished some commonsense advice respecting the delinquent consumer, and showed that by careful handling of even the worst paying gas user, good business could be built up and retained.

In the absence of Mr. John Keillor, Gas Engineer, B. C. Electric Power & Gas Company, Vancouver, B. C., his paper was read by Mr. G. W. Allen Secretary of the Association. Mr. Keillor very ably described by words as well as by many fine illustrations, just how the new automatically operated self-clinkering carburetted water gas plant at Vancouver, was recently erected, and how it is controlled.

A number of questions contained in the Association's Question Box were read and discussed by the members in Session.

At the Executive Committee meeting held on the first day of the Convention it was decided to again approach the Canadian Government respecting the reduction of the Tariff on Bituminous coal entering Canada for coke and gas making purposes. It was the consensus of opinion that the advantages obtained by the coking plants in the way of drawback of duties paid, should be extended to include the gas companies also manufacturing coke.

The election of Officers and Directors took place on the morning of the second day, with the following slate brought into office:

OFFICERS

President, K. L. Dawson, Sup't. Gas Department, and Sales Mgr., Nova Scotia Light & Power Co., Ltd., Halifax, N. S. 1st Vice-Pres., A. T. Leavitt, President, Hamilton By-Product Coke Ovens Ltd., Hamilton, Ont. 2nd Vice-Pres., Hugh McNair, Manager Gas Utility, Winnipeg Elecertic Co., Winnipeg, Man. Secretary-Treas., G. W. Allen, 7 Astley Ave., Toronto, Ont.

EXECUTIVE COMMITTEE

J. S. Norris, Vice-President and Managing Director, Montreal Light, Heat & Power Co., Montreal, Que. C. A. Jefferies, Sup't. Gas Works, Consumers' Gas Co., Toronto, Ont. Arthur Hewitt, Gen. Mgr., Consumers' Gas Co., Toronto 2, Ont. J. J. Humphreys, General Sup't. Gas Dep't. Montreal Light, Heat & Power Co., Montreal, Que. J. M. H. Young, Sup't. City Gas Co., London, Ontario. Col. D. R. Street, Gen. Mgr., Ottawa Gas Co., Ottawa, Ont., C. C. Folger, Gen. Mgr. Public Utilities Commission, Kingston, Ont. V. S. McIntyre, Mgr. Public Utilities Commission, Kitchener, Ont.

No definite decision was reached respecting the time and place of the next Annual Meeting,

A. G. A. Home Service Gas Appliance Course

THE first gas appliance course sponsored by the Home Service Committee of the American Gas Association opened at the American Gas Association Laboratory in Cleveland, Ohio, on June 24th. There were nearly 40 representatives from gas companies in various parts of the country, such as Texas, Wisconsin, Canada, Massachusetts and intervening sections, registered for this course.

The course was opened by Mr. R. M. Connor, Director of the Laboratory, on Monday at 10 o'clock. He introduced Mr. R. W. Gallagher, President of the East Ohio Gas Company and Chairman of the Laboratory Managing Committee. Mr. Gallagher welcomed the students and pointed out that the purpose of the Laboratory was to develop the right type of appliance for use of gas consumers and brought out the fact that the pupils taking this course had an opportunity to learn of the work being done at the Laboratory and in turn bring to the gas companies they are connected with the necessity of selling approved appliances. Mr. G. B. Shawn, Supervisor of the A. G. A. Testing Laboratory gave an outline of the course, stating that it was not a duplication of the course in Columbia Univer-

sity, but just a supplement, so that all Home Service workers would be familiar with all types of appliances and their uses, and be able to answer all questions which may come up in their work.

Program

Monday, June 24

9:00-9:30—Registration.

9:30-10:00—Opening Remarks by R. W. Gallagher, Chairman, Laboratory Managing Committee.

10:00-10:20—Outline of Course.

10:30-12:00—General Points of Burner Operation and Adjustment. Effects of Various Gas Service Conditions on Burner Operation. G. B. Shawn, Supervisor, A. G. A. Testing Laboratory.

2:00-4:30—Mechanics of Gas Ranges. Adjustment Operation, and Discussion of Various Types—F. A. Allen, Testing Engineer, A. G. A. Testing Laboratory.

Tuesday, June 25

9:00-10:00—Trip Through the Laboratory.

10:00-12:00—Use of Gas Ranges—Important Points to be Observed by the Housewife.—Dorothy Shank, Director Research Kitchen.

2:00-2:30—Accident Prevention with Gas Appliances—Special (Am. Stove. Co.) Reference to Incomplete Combustion. —F. E. Vandaveer, Chief Chemist.

2:40-4:30—Space Heaters—Discussion of Types, Their Use, (A. G. A. T. Lab.) Installation, and Operation.—W. P. Cook. Testing Engineer, A. G. A. Testing Laboratory.

Wednesday, June 26

9:00-9:45—Merchandising Gas Water Heaters—J. J. Genthner. Sales Manager, Cleveland Heater Co.

10:00-12:00—Various Types and Uses of Gas Water Heaters—N. J. Reiff. Testing Engineer, A. G. A. Testing Lab.

2:00-2:45—What Home Service Workers Should Know About Approved Appliances.—J. Donald Krocker, Publication Editor, A. G. A. Testing Lab.

3:00-4:30—Demonstration and Practice in the Use of Gas Water Heaters. N. J. Reiff.

Thursday, June 27

9:00-9:45—Service Relations Between Manufacturer and Gas Company and Dealer.—I. V. Brumbaugh, Director, Research Lab., Am. Stove Co.

10:00-12:00—House Heating Appliances —General Discussion of Types and Their Use. Demonstration of Controls and Operation. C. S. Stuchenholt, Testing Engineer, A. G. A. Testing Laboratory.

2:00-2:30—The Home Service Workers Place in the Industry. R. M. Conner, Director, A. G. A. Testing Laboratory.

2:45-4:30—Miscellaneous Appliances—Refrigerators, Incinerators, and Dryers.—J. Donald Krocker.

Friday, June 28

9:00-11:00—Chimney Conditions — Up and Down Drafts, Their Effect on Appliance Operation. Miscellaneous Conditions Affecting Operation.—G. B. Shawn.

2:00-4:30—Field Trip—Reliable Stove Co. and Enameling Division, American Stove Co.

Saturday June 29. (East Ohio Gas Co.)

9:00-10:00—Home Service Work in Schools.—Mrs. Flo. Frey, Home Service Director, East Ohio Gas Co.

10:00-12:00—Resumé of Course Discussion of Questions.

Enrollment

NAME	POSITION	COMPANY	CITY
1 Berry, Albertine	Home Service Dir.	San Antonio Public Service Company	San Antonio, Tex.
2. Boyer, E. W.	Salesman	East Ohio Gas Co.	Akron, O.
3. Buck, Helen W.	Home Service Dir.	Columbia Gas & Elec.	Pittsburgh, Pa.
4. Davis, Harrison	Fitter	East Ohio Gas Co.	Niles, O.
5. Deeds, Dolly S.	Home Service Asst.	Columbus Gas & Fuel Co.	Columbus, O.
6. Dowler, Flora G.	Home Service Asst.	Columbus Gas & Fuel Co.	Columbus, O.
7. Fisher, L. (Mrs.)	Home Service Dir.	Eriez Stove & Mfg. Co.	Erie, Pa.
8. Foran, Veronica	Home Service Dpt.	Ottawa Electric Lt. & Gas Company	Ottawa, Can.
9. Freday, R. G.	Appliance Man	East Ohio Gas Co.	Canton, O.
10. Gregory, Emily H.	Home Service Supervisor	Fall River Gas Wks. Co.	Fall River, Mass.
11. Hickey, Irene	Home Service Asst. Director	Milwaukee Gas Light Co.	Milwaukee, Wis.
12. Hill, Dorothy A.	Home Servece	Columbia Gas & Elec. Co.	Pittsburgh, Pa.
13. Hilliker, W. M.	Shop Foreman	East Ohio Gas Co.	Uhrichsville, O.
14. Hooke, W. N.	Sales Dept.	Ottawa Gas Company	Ottawa, Ont., Can.
15. Huddy, Nell M.	H. S. Demstrator	Rochester Gas & Elec. Corp.	Rochester, N. Y.

(Continued on page 86)

A. G. A. Home Service Gas Appliance Course Under Way

"Grumblin' an' Growlin' An' Sayin' Bad Words To Your Elevators Don't Get Ya Nowhere"

Said Jim Wilson, the old Engineer, to the exasperated "Boss" when the Elevator "lost the juice" and "the mill went on the bum" because "the transformer burnt out."

"What ya want to do," said Old Jim, "is to send for 'Ole Hook 'er to the Biler and let him change these things to his kind **WHAT ALWAYS GO SO LONG AS YA HAVE STEAM.**"

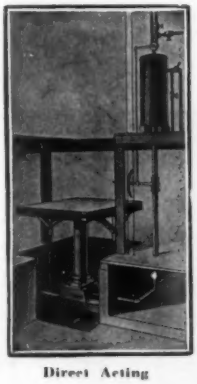
And as a matter of fact this is exactly what some of the Most Successful concerns in the land are doing.

For example, to get down to brass tacks:

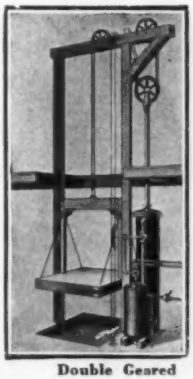
The Brooklyn Union Gas Co.
The Yale & Towne Mfg. Co.
The B. F. Goodrich Co.
The Bureau of Engraving & Printing.
The American Hard Rubber Co.
The R. J. Reynolds Co.

Just a little half dozen of the concerns who do not pass dividends but make extras probably **ALL BECAUSE THEY KNOW ENOUGH TO**

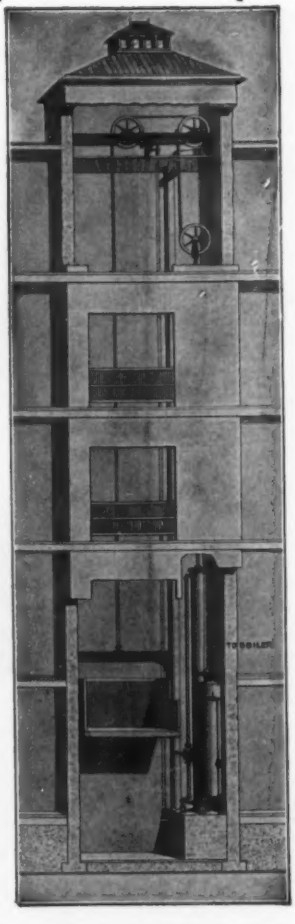
"HOOK 'ER TO THE BILER"



Direct Acting



Double Geared



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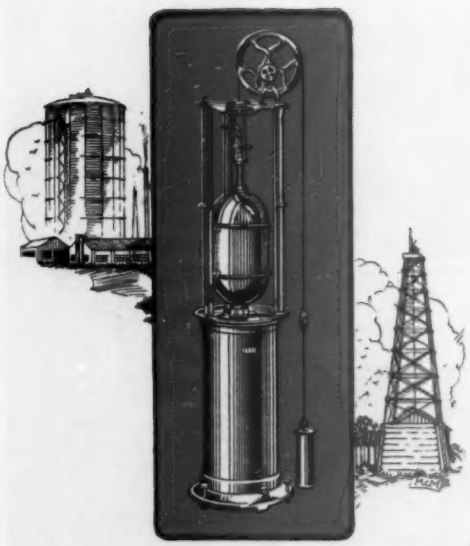

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In Gas Meters, enduring accuracy, quality construction and time-tested improvements are the essence of value.

There can be no economic justification for "good enough" or experimentation in the volume buying of such important long-term equipment.

For that reason, the vast majority of Gas Companies are guided solely by considerations of *true economy* in the purchase of Gas Meters.

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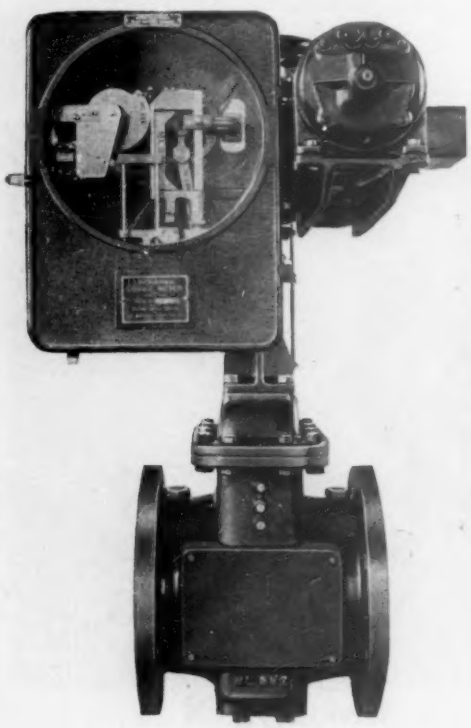

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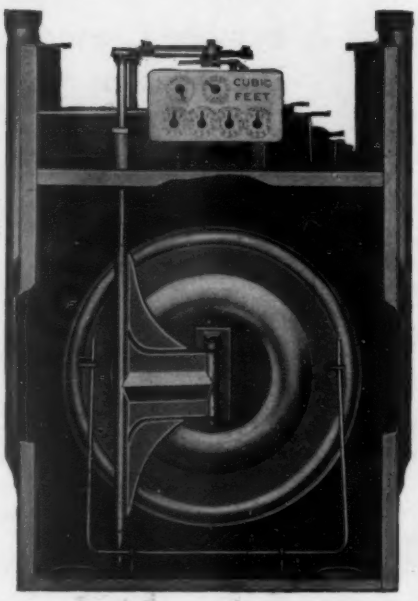

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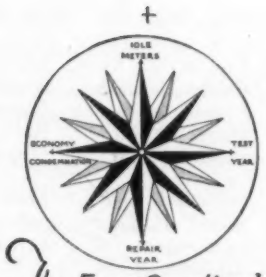

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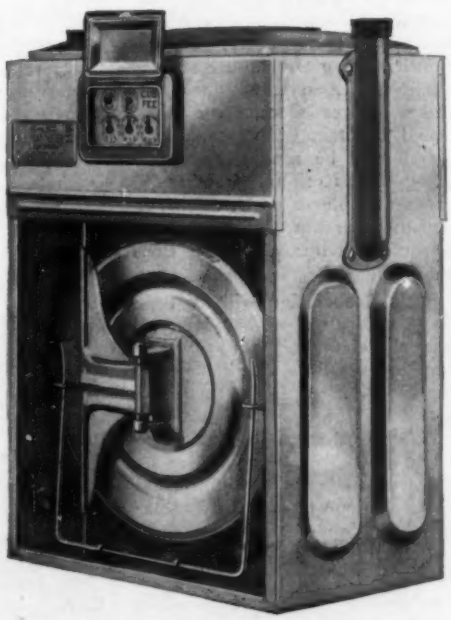


A. G. A. Home Service Gas Appliance Course

(Continued from page 82)

16. Huley, W. C.	Gen. Foreman	East Ohio Gas Co.	Warren, O.
17. Llewellyn, M. C.	Manager	East Ohio Gas Co.	Akron, O.
18 Ludlow, Kress V.	Salesman	Cleveland Heater Co.	Cleveland, O.
19. Malone, J. E.	Clerk	East Ohio Gas Co.	Cleveland, O.
20. Matthews, J. L.	Clerk	East Ohio Gas Co.	Cleveland, O.
21. Mulhern, Jessie	Instructor	Milwaukee Gas Light Co.	Milwaukee, Wis
22. Parry, Gert. J.	Instructor	Milwaukee Gas Light Co.	Milwaukee, Wis.
23. Pfeiffer, A. C.	Meter Rpr, Man	East Ohio Gas Co.	Wooster, Ohio
24. Preston, Grace Rebman	Home Service Asst. Director	Eriez Stove & Mfg. Co.	Erie, Pa.
25. Sharp, E. V.	Agent	East Ohio Gas Co.	Doylestown, O.
26. Sheldon, Ruth	Home Service Dir.	Central Public Service Corporation	Roanoke, Va.
27. Showalter, A. W.	Clerk	East Ohio Gas Co.	Cleveland, O.
28. Spiker, F. H.	Salesman	East Ohio Gas Co.	Massillon, O.
29. Swearingen, M. Jane	New Business Dept.	Columbia Gas & Elec. Co.	Pittsburgh, Pa.
30. Ungericht, Hulda	Home Service Dir.	Columbus Gas & Fuel Co.	Columbus. O.
31. Van Kirk, C. R.	Service Man	East Ohio Gas Co.	Canton, O.
32. Venne, Leo. V.	Salesman	Ottawa Gas Co.	Ottawa, Ont., Can.
33. Turek, E. O.	Sales Promotion	East Ohio Gas Co.	Youngstown, O.
34. Young, M. J.	New Business Dept.	East Ohio Gas Co.	Youngstown, O.

Southwestern Public Service Association Makes Important Changes in Its Constitution

At a recent meeting, the governing body of the Southwestern Public Service Association made several changes in the Constitution, so as to permit and encourage even greater co-operation in the future, than in the past, with the various Associations with which we are affiliated. Most important of these were provisions to waive separate Conventions of this Association, and encourge attendance by our membership at suitable Regional Conventions of their craft; especially the Southwestern Division, Natural Gas Department, American Gas Association, and Southwest Geographic Division, National Electric Light Association. Provision will be made, however, to have group or sectional meetings, at such times and places as will be profitable to our membership, for any of the groups or sections which constitute the Association.

This Association will, as for the past 35 years, represent the interests of the gas, the electric, the street railway, and telephone public service companies, in Texas and Louisiana. In the absence of a full meeting of the Association, there has been substituted an Advisory Council to consist of one representative from each of the member companies, which shall convene from time to time, for the consideration of the general affairs and policies of the Association, and elect an Executive Committee. The Executive Committee has full charge of the affairs of the Association, and elects from its number the President and three Vice Presidents, and also elects the Secretary and Treasurer, which latter will not necessarily be members of the Executive Committee.

Officers and Executive Committee just selected for the year 1929-30 are:

President, Knox Lee, Southwestern Gas & Electric Company, Marshall, Texas.

1st Vice President, Chairman Gas Section, Frank L. Chase, Vice President, Lone Star Gas Company, Dallas, Texas.

2nd Vice President, Chairman Electric Section, J. W. Carpenter, President, Texas Power & Light Company, Dallas, Texas.

3rd Vice President, Chairman Railway Section, W. B. Tuttle, President, San Antonio Public Service Company, San Antonio, Texas.

Others members of the Executive Committee:

George H. Carter, Vice President, Texas Utilities Company, Marlin, Texas.

J. G. Holtzclaw, Vice President, Gulf States Utility Company, Beaumont, Tex.

W. L. Phehn, General Manager, Southwestern Bell Telephone Company, Dallas, Texas.

Treasurer, R. G. Soper, Vice President, Dallas Gas Company, Dallas, Tex.

Secretary, E. N. Willis, Dallas, Tex.

Report of General Nominating Committee, American Gas Association

To members of the American Gas Association: In compliance with Section 2 of Article II of the By-Laws of the American Gas Association, announcement is hereby made to the membership of the following report of the General Nominating Committee which will be presented to the annual convention in Atlantic City, N. J., in October 1929:

For President—Bernard J. Mullaney, vice president, The Peoples Gas Light and Coke Company, Chicago, Ill.

For Vice-president—Clifford E. Paige, vice-president, The Brooklyn Union Gas Company, Brooklyn, N. Y.

For Treasurer—William J. Welsh, president, New York and Richmond Gas Company, Stapleton, Staten Island, N. Y.

For Directors—2-year Term: H. C. Abell, Electric Bond and Share Company, New York, N. Y.; J. S. DeHart, Jr., Isbel-Porter Company, Newark, N. J.; F. C. Freeman, Providence Gas Company, Providence, R. I.; R. W. Gallagher, East Ohio Gas Company, Cleveland, Ohio.; Arthur Hewitt, Consumers Gas Company of Toronto, Toronto, Ont., Can.; F. T. Hulswit, American States Securities Corp., New York, N. Y.; A. B. Macbeth, Southern California Gas Company, Los Angeles, Cal.; P. S. Young, Public Service Electric and Gas Company, Newark, N. J.; Fred A. Miller, S. R. Dresser Mfg. Company, Bradford, Pa.

Respectfully subitted,

E. H. Rosenquest, Chairman

Ewald Haase — F. J. Schafer

G. S. Hawley — W. E. Steinwedell

T. R. Weymouth

The following are nominated by Section Nominating Committees to serve as Section Officers for the Association Year 1929-1930:

Accounting Section

Chairman—J. L. Conover, The Public Service Electric and Gas Company, Newark, N. J.

Vice-chairman—J. I. Blanchfield, The Brooklyn Union Gas Company, Brooklyn, N. Y.

Commercial Section

Chairman—Geo. E. Whitwell, The Philadelphia Company, Pittsburgh, Pa.

Vice-chairman—Merle E. Skinner, Mohawk-Hudson Power Corporation, Albany, N. Y.

Industrial Gas Section

Chairman—C. C. Krausse, Consolidated Gas Electric Light and Power Company, Baltimore, Md.

Vice-chairman—D. W. Chapman, The Peoples Gas Light and Coke Company, Chicago, Ill.

Manufacturers Section

Chairman—F. G. Curfman, The Improved Equipment Company, New York, N. Y.

Vive-chairman—E. S. Dickey, Maryland Meter Works, Baltimore, Md.

Publicity and Advertising Section

Chairman—James M. Bennett, The United Gas Improvement Company, Philadelphia, Pa.

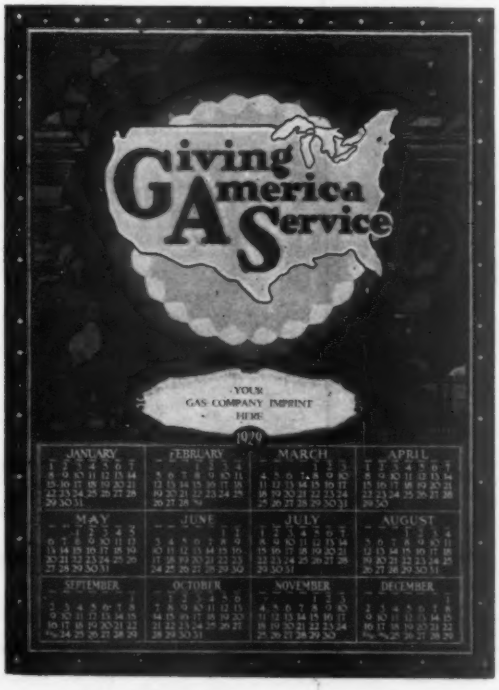
Vice-chairman—Donald M. Mackie, Consumers Power Company, Jackson, Mich.

Technical Section

Chairman—B. V. Pfeiffer, The United Gas Improvement Company, Philadelphia, Pa.

Vice-chairman—R. G. Griswold, Cities Service Company, New York, N. Y.

The *First All Gas* Calendar *Is Well Received!*



To really appreciate what a splendid appliance sales stimulator the calendar can be to the largest and smallest gas company you must see the attractive original.

The generous response of the Gas Industry to our announcement of the "First All Gas Calendar ever published," proves that this daily reminder of the many uses of gas, comprises a new idea heartily welcomed by the gas industry.

The illustration of the calendar shown here cannot begin to do justice to the truly beautiful original in its nine brilliant, eye-catching colors. The Forbes Lithograph Mfg. Co., has made a wonderfully impressive piece of art work with which the industry can be proud to be identified.

On each monthly leaf an illustration of some gas appliance is shown, adapted to that particular month; for example: Gas Refrigerator for June (see sample below)—these serve to impress on the reader's mind the story you have to tell in an emphatic manner, *right in your customer's home.*

The American Gas Journal is publishing this calendar to further the interests of the gas industry, of which for 70 years it has been a part. They are sold in lots from 500 to 50,000 or more, at a price so low that they are within the reach of every gas company in the country.

Sign and Mail coupon today.

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Send further information regarding "Giving America Service" Art Calendar, for 1930.

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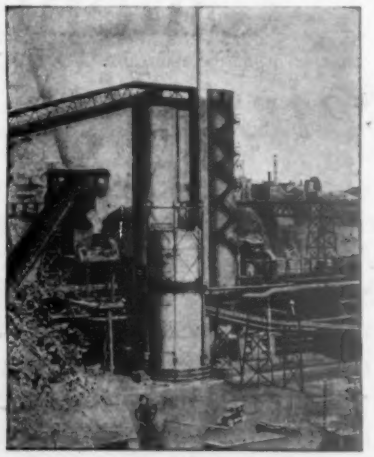

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B. H. CO. VERTICAL SCRUBBER
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DRY QUENCHING OF COKE
Dry Quenching Equipment Corp. 204

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Darling Valve & Mfg. Co. 35

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BLOWERS

CONNERSVILLE GAS EXHAUSTERS, BOOSTERS AND METERS
The Connersville Blower Co. 60

COVERS INDUSTRY LIKE A BLANKET
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CYCLOIDAL ROTARY PUMPS
The Connersville Blower Co. 62

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LOW PRESSURE GAS PUMPS
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The P. H. & F. M. Roots Co. 208

Six Major Improvements

(1)
Sprague Special Diaphragms—
Acid resisting, semi-chrome retanned leather

(2)
Enclosed top bracket—
Protects and lubricates the worm and gear.

(3)
Improved valve cover—
Eliminates possible breakage in transit.

(4)
Raised bosses on flanges—
Eliminate seepage in wet gases.

(5)
Bronze bushed links—
Reduce wear and lost motion.

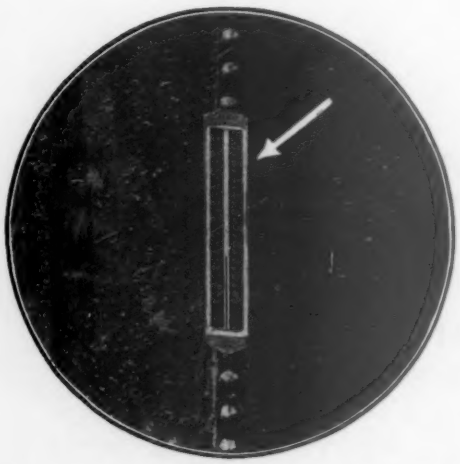
(6)
Improved adjusting tools—
Reduce shop costs.

All designed to better the one and a half million Sprague Meters in Service.

THE SPRAGUE METER CO.

Bridgeport, Conn.

Water Condenser Inlet



Just one of the many places in the gas plant where a *Tycos* Thermometer proves its worth.

Tycos Temperature Instruments
INDICATING - RECORDING - CONTROLLING

FOR EVERY GAS PLANT NEED

Ammonia Still Thermometer
Engraved Stem "
Flue Gas "
Gas Gauges
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Still "
Superheater "
Water Circulation "
Regulators for Pressures and Temperatures

Gas Plant Catalog upon request.

Taylor Instrument Companies

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Canadian Plant
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There's a Tycos or a Taylor Temperature Instrument for Every Purpose

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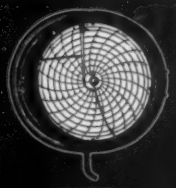
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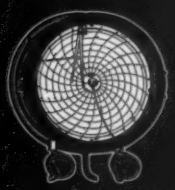
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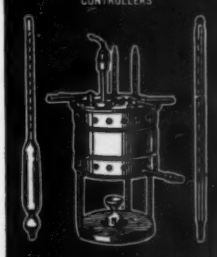
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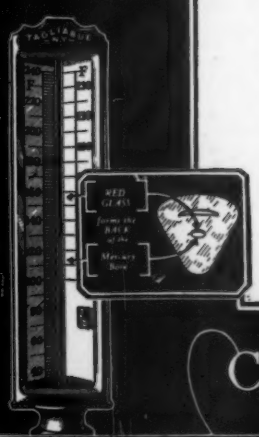


FULLY COMPENSATED TAG ROUND FORM RECORDERS

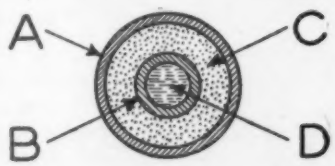
Allowing tube lengths up to 150 feet with Absolute Accuracy

RECORD-MAKING within 25 feet of the bulb center of an installation is often impracticable and long thermo-sensitive connecting tubes introduce inaccuracies with fluctuations of the surrounding atmosphere.

TAG engineers have developed the line of Fully Compensated Mercury Recorders. It is now possible to have your recorder 100, even 150 feet from the installation and yet retain the same TAG accuracy.

Of course, these TAG Recorders are obtainable in the new Round Form — a greatly improved and much handsomer case and at a price that will be a pleasant surprise — equipped for either panel or wall mounting.

The construction of the TAG Fully Compensated Mercury Recording Thermometers (shown in this line drawing) consists of a double connecting tubing, the inner capillary tubing (B) contains the mercury (D) and the space between the inner and outer tubing (A) is filled with gas (C). The gas-filled space acts like a long bulb, connected to a capsular spring in recorder case. This spring shifts fulcrums of mercury mechanism and compensates it for atmospheric temperature fluctuations.



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Ask for prices too. . . . they will interest you.

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18 TO 88 THIRTY-THIRD ST., BROOKLYN, N.Y.

Insist on Mercury Thermometers with the TAG-Hespe RED Reading Column

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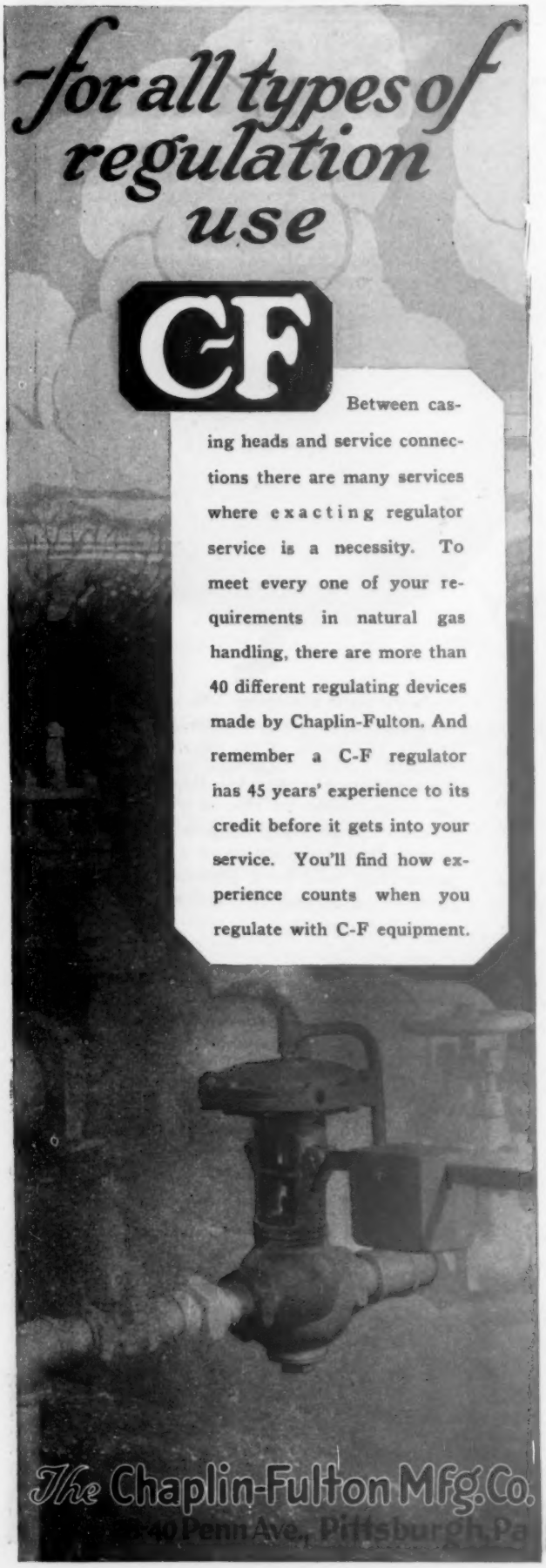
for all types of regulation use
C-F
Between casing heads and service connections there are many services where exacting regulator service is a necessity. To meet every one of your requirements in natural gas handling, there are more than 40 different regulating devices made by Chaplin-Fulton. And remember a C-F regulator has 45 years' experience to its credit before it gets into your service. You'll find how experience counts when you regulate with C-F equipment.
The Chaplin-Fulton Mfg. Co.
40 Penn Ave., Pittsburgh, Pa

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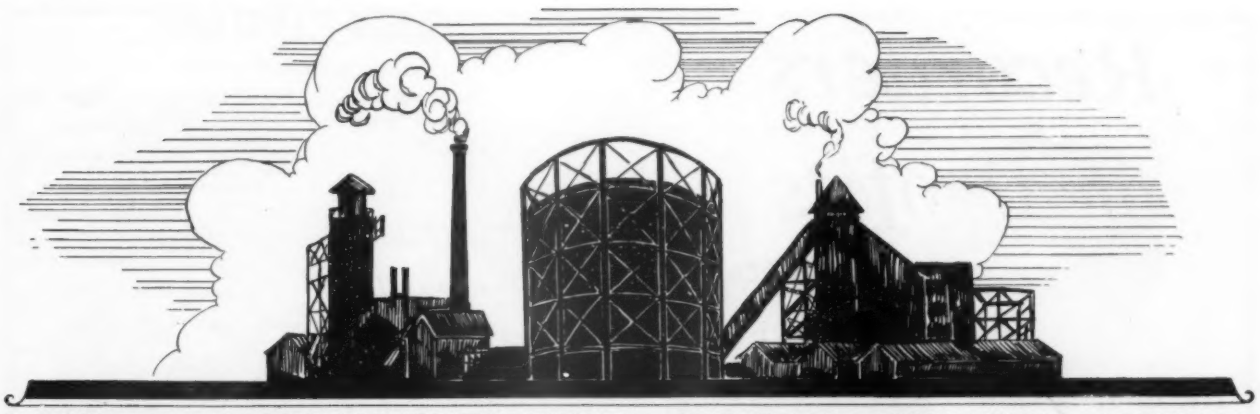


BRISTOL'S RECORDING INSTRUMENTS SIMPLIFY OPERATION CONTROL

Instrument Records Leave No Room For Doubt

Automatically Written on the Chart is a Continuous, Detailed Account of What Temperature, Pressure, etc., is Being Held at all Times.

In virtually every process of cleansing or distributing gas, or reclaiming of by-products, economical operation is dependent upon strict adherence to pre-determined schedules of pressure, temperature, etc.

To continuously record these conditions; to show what is taking place inside the gas-making, purifying or distributing equipment is the function of Bristol's Recording Instrument Equipment. Installed at generator on the carburetor, top and bottom of superheater, on hydraulic main, seal pot, washers, scrubbers, ammonia stills, tar extractor, purifiers, station meter, and at various points about the distribution system, the chart records of operation obtained show clearly the why and wherefore of operating efficiency; pointing out not only where improvement is needed, but—once the correction is made—acting as a guide in keeping things straight.

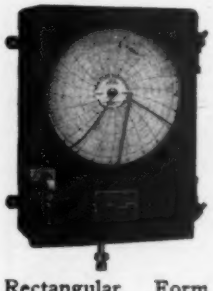
Original Form Model Bristol's Recording Thermometer.

Also, aside from aiding workmen in maintaining efficient operation, Recording Instrument Charts provide permanent records, or facts which aid the management in analyzing conditions when planning improvements.

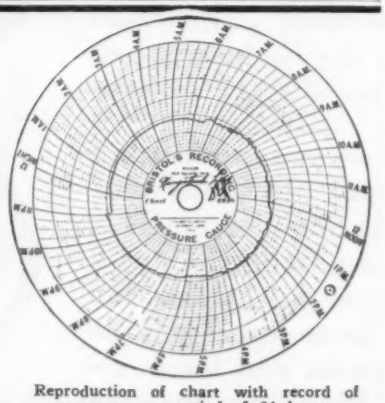
Bristol's Equipment can be furnished to take care of almost any instrument needed in the gas industry. Designed with a view to simplicity of operation; having dust-, moisture-, and fume-proof construction, operation should continue accurate and satisfactory for years, with very little care and adjustment.

Engineering Service

Have Bristol's Sales Engineers make a survey of instrument possibilities in YOUR plant. Their wide expererience gained in hundreds of similar instances is yours to use for the asking. No obligation.



Rectangular Form Model Bristol's Recording Pressure Gauge. Case is of dust- and moisture-proof construction



Reproduction of chart with record of pressure over period of 24 hours

The above chart gives in detail a complete day's record of pressures maintained in suburban gas mains. Any complaint of off pressure can be checked in a moment simply by referring to this instrument. Or, better still, pressures can be watched and accurately controlled in accordance with economy and good service at all times.

TRADE MARK
BRISTOL'S
REG. U.S. PAT. OFFICE

The Most Extensive Line of Recording Instruments and Automatic Control Equipment

Pressure Gauges for both permanent mounting and portable test work; Vacuum Gauges, Liquid Level Gauges, Thermometers, Pyrometers, Psychrometers, Voltmeters, Ammeters, Wattmeters, Electrical Operation Recorders, Mechanical Motion Recorders, Tachometers, etc. Also Automatic Control Equipment and Controller Valves for controlling temperature, pressure, liquid flow, liquid levels, etc., etc.

The BRISTOL Company

Waterbury, Connecticut

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San Francisco

Recorders of Profits

THE thin, red line traces a record of profits . . . . the chart is the engineer's balance sheet.

Have you ever made a study to determine exactly your one best temperature? And have you taken the time to figure out the profits and losses resulting from any variation from this temperature? Just try it. Sometimes a difference of only a few degrees means hundreds of dollars. American Recording Thermometers give you a record of facts . . . they are Recorders of Profits.

This is Type 3300 American Recording Thermometer. It is actuated by mercury. Made for any temperature range from minus 40 to plus 1000° F. The chart is 10 in. in diameter. The case is die cast with a beautiful black enamel finish. It is moisture proof. The pen-arm is Monel metal, and glass fountain pens are used. The flexible connecting tubing is steel covered by spiral bronze armor over which phosphor bronze braiding is woven. It is the only Recorder furnished with the Time Punch, making every instrument a Watchman's Clock. Accuracy is guaranteed. Compare its construction and accuracy by test!

Specify Catalogs Desired

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CONSOLIDATED ASHCROFT HANCOCK CO., INC.
Bridgeport, Conn.
Subsidiary of Manning, Maxwell & Moore, Inc.

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EDITOR, AMERICAN GAS JOURNAL, 53 PARK PLACE, NEW YORK

Please send (at no expense to me) the following booklets.
(Insert numbers from list)

.....

.....

Name .....*Position* .....

Company .....

Address .....

The SMILE of PUBLIC APPROVAL

FOR STEAM AND VAPOR INSTALLATIONS

FOR HOT WATER AND WARM AIR INSTALLATIONS

TRADE MARK

The Roberts Controlled Gas Heating Unit has earned the smile of public approval.

Show this controlled Gas Heating Unit to your own customers—explain the advantages of the radiants, tell them about the air ratio controlled and directed to points of combustion. Think! These are only a few of the Roberts exclusive features. Every domestic user of gas in your city is a prospect.

Write today for our sales proposition.

ROBERTS-GORDON APPLIANCE CORPORATION

SUCCESSORS TO ROBERTS GAS BURNER CORP.

CURTISS BUILDING

Delaware Ave., at Tupper St., Buffalo, N. Y.

The Door to Service

In the purchase or specification of automatic controls there is a definite consideration beyond the service that the goods themselves provide---the service which is rendered by the control manufacturer.

That service, with us, begins before there is an actual purchase. Engineering help is available for the solution of your control problems---and that service continues with a national distribution system to give you prompt delivery. Furthermore adequate personal contact gives you the advantage of our control experience at all times.

We appreciate the necessity for service ---prompt, efficient and thorough-going in every particular. Our door is truly the door to service, before, during, and after the purchase of Time-O-Stat products.

TIME-O-STAT CONTROLS COMPANY
ELKHART, INDIANA

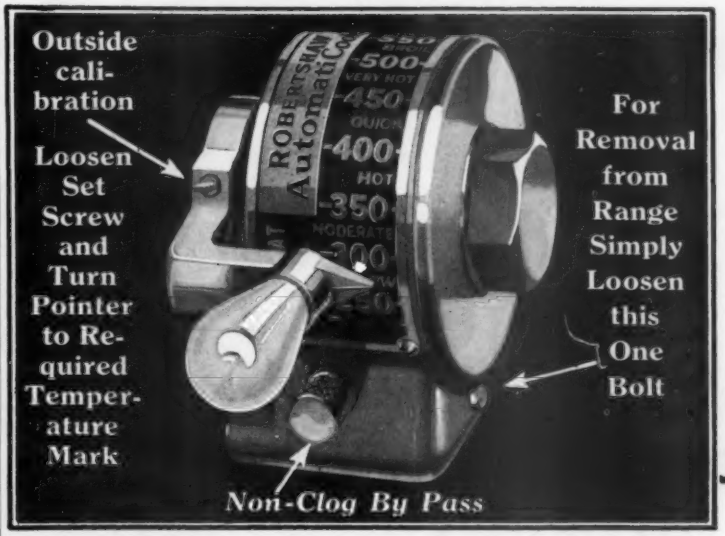
Successor to

Time-O-Stat Corporation
Absolute Con-Tac-Tor Corporation
Leachwood Company
Cramblet Engineering Corporation

Manufacturers of AUTOMATIC CONTROLS *for*

Oil Burners - Gas Burners - Electric Refrigerators - Mechanical Stokers - Furnace Fans
Industrial Ovens - Ice Machines - Unit Heaters - Water Heaters - *Also* Sign Flashers
Mercury Switches - Electric Heaters - Corrugated Metal Bellows

GAS COMPANIES and STOVE DEALERS



Appreciate the Exclusive Advantages of the "B" Type

ROBERTSHAW AutomatiCook

Outside Calibration. Takes just a few seconds to change the temperature setting if required, by means of a convenient set-screw on the temperature pointer. Merely loosen the set-screw, move the pointer to the proper temperature mark on the dial, and then tighten the set-screw.

Quick Removal. Should the "B" Type AutomatiCook become damaged for any reason, necessitating replacement, it can be removed without disconnecting the range or disturbing the linings or the piping. Requires no mechanical servicing or repairs on the job. Simply loosen one bolt, replace the Thermostat with a spare and tighten the bolt. The job can be done in less than a minute's time.

Non Clog By-Pass Pilot. Will not clog nor bind. Always moves freely and maintains its adjustment. Eliminates servicing, adjusted by turning either to the right or left.

Non-Corrosive Valve Seat. The AutomatiCook is now being equipped with a Raised Non-Corrosive Valve Seat which will resist the corrosive action of gas, eliminating any possible trouble from this source.

Write for 8-Page Folder, illustrating and describing the above advantageous features.

ROBERTSHAW THERMOSTAT CO.

Youngwood, Penna.

The Robertshaw AutomatiCook is now used on more than 80 leading makes of Gas Ranges

Your customers *don't buy* gas

they buy the comfort and convenience it provides

THE VALUE of gas is measured by the comfort and convenience it provides, rather than by the cost per cubic foot or by the number of feet used. As long as your customers are satisified with their present conveniences, they will not buy more gas.

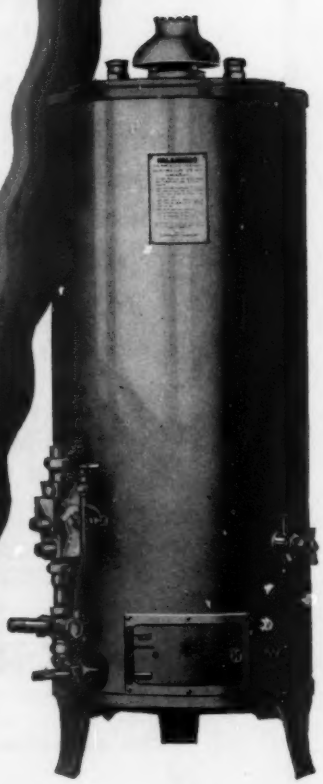
Hundreds of homes on your lines that have practically every known modern convenience, are putting up with or tolerating old fashioned methods of water heating. WHY? Simply because the comfort and convenience of modern hot water service has not been brought to their attention with sufficient force to make them want it.

These are the homes your salesmen should reach---these are the homes that will give you the most profitable increase in gas sales.

Let the Humphrey Merchandise Man help you reach them. He knows how.

Increase your Gas Sales— Sell Greater Comfort and Convenience

THE HUMPHREY COMPANY
(DIV. RUDD MFG. CO.)
KALAMAZOO, MICHIGAN

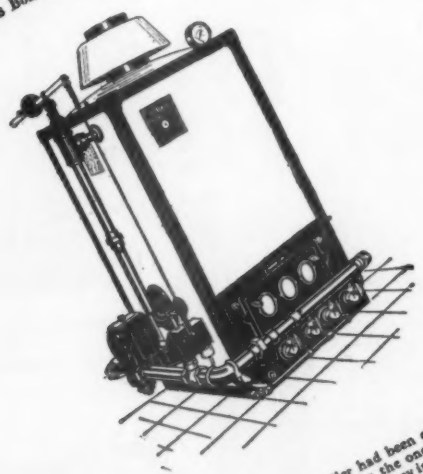


HUMPHREY
KALAMAZOO
AUTOMATIC GAS WATER HEATER

ANNOUNCEMENT

Gas Boilers for House Heating AT LOWER COST

We have acquired the agency for the distribution of the Ideal Gas Boiler, in Baltimore and Vicinity.



The worth and value of the Ideal Gas Boiler had been established by thorough tests and investigations before we selected it as the one of greatest benefit and satisfaction to our customers. Because of its efficiency in operation and its reasonable original cost, the many advantages of automatic gas heat can now be brought into homes which heretofore have been denied this great convenience.

Our usual liberal terms are available notwithstanding the popular prices at which we offer the Ideal Gas Boiler. and we will be glad to cooperate with your heating contractor. A phone call will bring complete information without any obligation on your part.

Industrial Fuel Department
The Gas and Electric Company
408 Lexington Building
PLaza 8000

This is a reprint of the advertisements run by

The Consolidated Gas Electric Light & Power Co. of Baltimore

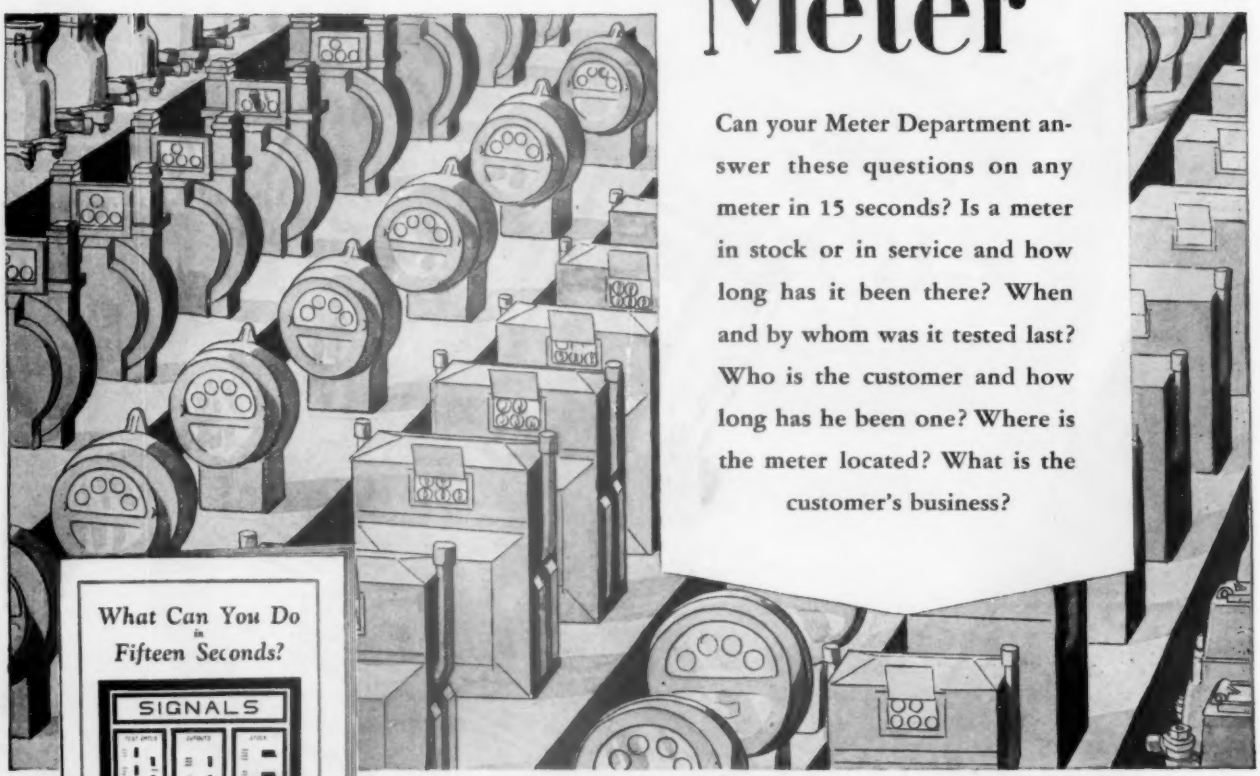
in the Baltimore papers week of April 1st

AMERICAN RADIATOR COMPANY

For complete information on **IDEAL GAS BOILERS** write to —

AMERICAN GAS PRODUCTS CORPORATION
376 Lafayette Street, New York

Instantly Available the record of every Meter



Can your Meter Department answer these questions on any meter in 15 seconds? Is a meter in stock or in service and how long has it been there? When and by whom was it tested last? Who is the customer and how long has he been one? Where is the meter located? What is the customer's business?

THIS book tells how these questions can all be answered in 15 seconds. It tells how the Erie County Electric Company worked out a system that makes this remarkable feat possible for any public utility company.

Every public utility man should read this book. It's interestingly written, highly instructive and it's free. Just mail the coupon.

Kardex Division

Remington Rand

BUSINESS SERVICE *INC.*

Branch Offices in All Principal Cities

Kardex Division, Remington Rand Business Service Inc., Buffalo, N. Y.
Gentlemen: Send me your Meter Record book. If it's as good as you say, I'll read it thoroughly.

*Name*_____ *Address*_____

*City*_____ *Position*_____

Show Them how It's done With BARBER *Automatic* JET GAS BURNERS

SPECIFICATION DATA FOR BARBER AUTOMATIC GAS BURNER EQUIPMENT

The CLEVELAND GAS BURNER & APPLIANCE CO.
Burner Specialists
3702-04 Superior Avenue, Cleveland, Ohio

Date

For ... Name ... Address ... City ... State

Mfr's Name of Appliance ... Trade Name ... No. ... Type ... Warm Air, Water, Steam or Vapor

Direct Radiators ... Sq. ft. ... Dimensions of firebox at grate level ... inches wide ... inches long ... If round ... inches diameter.

Ash door opening ... inches wide ... inches high ... Clinker door opening ... inches wide ... inches high ... inches from ash door front to rear of firebox

... inches from clinker door front to rear of firebox ... inches from top of grate to bottom of ash pit ... Kind of fuel now used

Age heating appliance ... years ... Condition ... Gr'd. Fair or Poor ... Rating ... See Mfrs Catalog ... Sq. ft. Does heating appliance properly heat bldg with present fuel? ... Current ... D.C. or A.C. ... Voltage ... Cycle

Is there a Gas Pressure Regulator installed? ... Size ... inches ... For ... Automatic or Manual ... Control ... Gas Service line ... inches

Kind of Gas ... B T U

The above information is desirable to accurately build the burner and trim upper and lower baffles to specifically fit the appliance, reducing installation time to the minimum.

The following is of material assistance to our Engineering Department

Type of Building ... Brick or Frame ... Outside Measurements ... feet wide ... feet long ... feet high ... Age of Bldg ... No. Rooms

Fuel cost During past Heating season $ ... Heat Regulating Equipment Now Installed

Remarks:—

SIGNED

FOR JOB

Ask for your supply of Specification Data Sheets, containing valuable data to be used by your salesmen to order Barber "Tailor-Made" assemblies—designed specifically to fit the Boiler, Furnace or Appliance for which they are intended.

YESTERDAY'S

Makeshift Methods Might Do—but

TODAY'S

Specialization and the Barber "Tailor-Made" Plan Bring Real Success — Without Guess-Work

Conditions change practically overnight in many industries . . . and, in the Gas Conversion Market a decided change has taken place.

The pioneer days are gone—involving the necessity of convincing the trade that there is a MARKET for good Gas "Conversion Burners." Forever past is the equally makeshift method of merchandising *Gas Conversion Burners.*

The AUTOMATIC era is in vogue—and foremost in evidence is the universally popular demand for the Barber AUTOMATIC Jet Gas Burner System . . . the most scientific, completely self-controlled burner with the highest efficiency in the gas conversion field.

You don't have to *guess* any longer as to the correct burner equipment to order. You don't have to "sweat blood" over *laborious installations.* You don't *shrink your profits* from burdensome overhead. *You simply use the Barber Specification Data Sheet.* Fill in the information required. Send it to us. We then furnish a Barber "Tailor-Made" Burner Equipment based on these Specifications. Your installer quickly completes the installation and your sale is accomplished with *clean profits.*

The CLEVELAND GAS BURNER & APPLIANCE CO.
Burner Specialists
3702-04 Superior Avenue, Cleveland, Ohio

Because of the greatly increased demand for Barber AUTOMATIC Gas Burners, we invite correspondence from Direct Factory Representatives and Distributors that have experience selling the Heating Trade and Gas Companies.

BARBER *Automatic* JET GAS BURNERS

BAROMETERS

**PHILADELPHIA, THE WORKSHOP OF THE WORLD,
has 14,000 Manufacturing Establishments of which
many have World-Wide Reputations.**

"PRINCO" STANDARD FORTIN MERCURIAL BAROMETERS

***are in World-Wide use because they,
too, have a "World-Wide Reputation"***

**THEY ARE GOOD BAROMETERS
THEY ARE REASONABLE IN PRICE!**

For more than a decade they have been made in such manner that they can be shipped safely and successfully wherever there is a common carrier. This has been recognized as an achievement in Barometry.

PRECISION THERMOMETER & INSTRUMENT COMPANY
1439 BRANDYWINE STREET - - - - - PHILADELPHIA, PA.

(Patented)

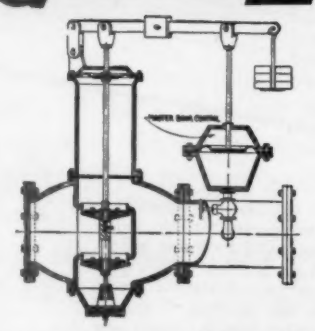
A dependable, uniform gas flame is secured by the adoption of lava gas tips which have proven their adaptability to varied industrial applications

Made to fit standard reducing couplings in fifteen, thirty and forty-five cubic foot gas capacities.

Write us for further information.

American Lava Corporation
29-59 William St. Chattanooga, Tenn.
Manufacturers of Lava Tips & Heat Resistant Insulators

GROBLE REGULATORS & GOVERNORS



High Pressure Line Regulators for reducing pressure from pounds to pounds.

Groble Features —

Large Hand Holes
Balanced Valves
Two Piece Valve Stem
Master Bowl Control

Made in sizes from 2 inch to 10 inch.

GROBLE GAS REGULATOR COMPANY
Anderson, Indiana

Representatives

H. E. Broughton, 404 Donovan Building, Detroit.
The Worrall Co., 472 Central Ave., East Orange, N. J.
Midland Supply Co., Dwight Bldg., Kansas City, Mo.
Seidenglanz & Co., Second Unit Santa Fe Bldg., Dallas.

You can make a real saving with this pipe-

Made in Double Random Lengths

ACCURATELY FINISHED ENDS GOOD JOINTS

FEW JOINTS LESS LABOR

"NATIONAL"

America's Standard Wrought Pipe

HERE is a definite saving to gas companies, of time, labor and joint-making materials in the laying of mains. Approximately one-half the usual number of joints are eliminated by using double length pipe. Another advantage of importance is that the possibility of leakage is greatly reduced and an all around better line is obtained.

Because of its high tensile strength, uniform structure and good welding qualities, NATIONAL Pipe also assures a strong, sound, dependable line from end to end. Note the illustration: a number of lengths of NATIONAL Pipe may be first welded, then rolled into position and lowered into the trench—a test that demonstrates the strength and ductility of the pipe. Ask for Bulletin No. 26.

NATIONAL TUBE COMPANY - Pittsburgh, Pa.

Subsidiary of United States Steel Corporation

FLANGE END

VALVES

We can furnish Valves for working pressures up to 1200 lbs. per sq. in.

Send for Circular 5

The LUDLOW

VALVE MANUFACTURING COMPANY
TROY, N. Y.

New York 81 Fulton St. | Boston Tremont Bldg. | Philadelphia Harrison Building
Chicago The Rookery | Pittsburgh Oliver Bldg. | Kansas City R. A. Long Bldg.

RITER-CONLEY CO.
STEEL CONSTRUCTION
PITTSBURGH

STEEL PLATEWORK
FOR
THE GAS INDUSTRY

Gas Holders
Pressure Tanks
Steel Pipe
Steel Barges
Oil Tanks
Purifiers

BRANCH OFFICES
New York — Boston — Baltimore
Chicago — Philadelphia — Detroit
Cleveland — Cincinnati — Seattle
San Francisco — Los Angeles

LEADING GAS COMPANIES USE LAMBERT METERS

All sizes up to 3,400 cu. ft. capacity

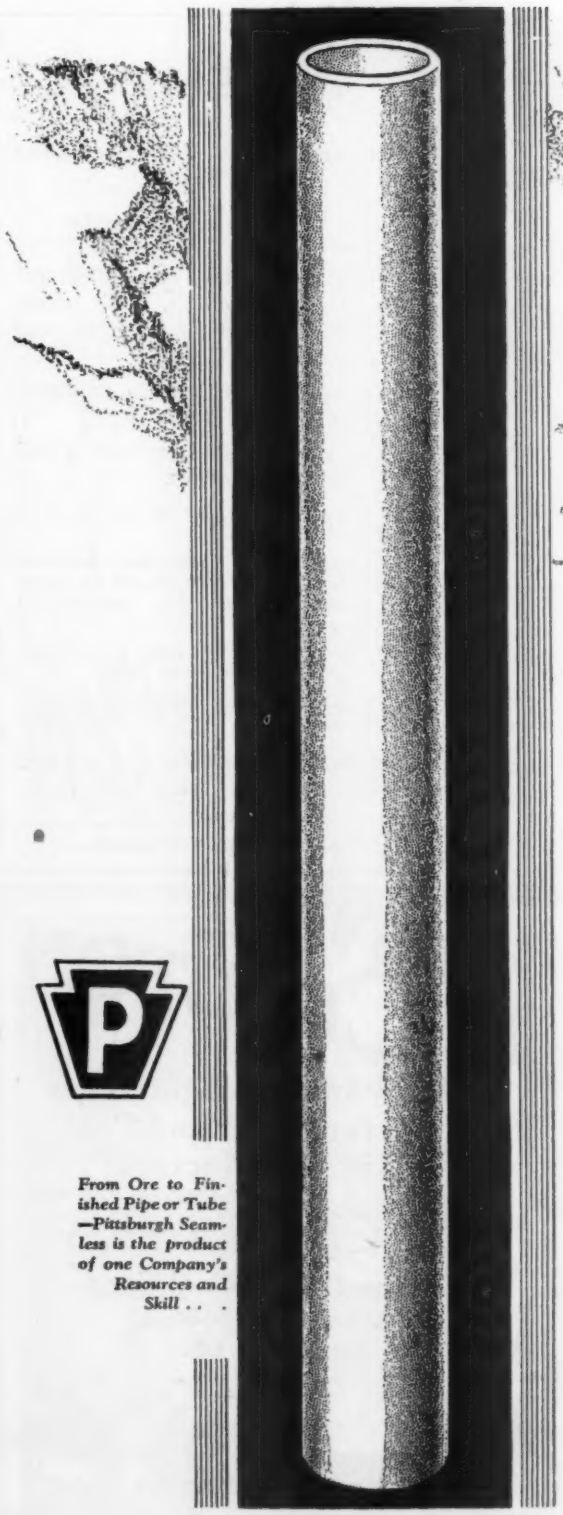
Meters
Diaphragms
Repairs
Provers
Pumps
Calorimeters
Wet Meters
Gauges
Apparatus

LAMBERT METER CO.
BUSH TERM. BLDG. 4, BROOKLYN, N. Y.

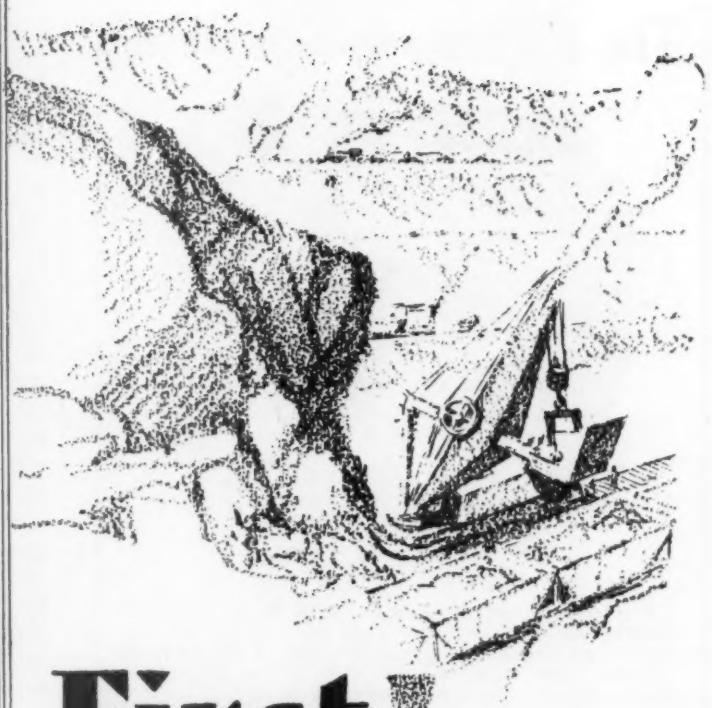
Byllesby Engineering and Management Corporation

BYLLESBY
PIONEERS IN PUBLIC SERVICE
ENGINEERING FINANCE MANAGEMENT

CHICAGO NEW YORK
Pittsburgh San Francisco



From Ore to Finished Pipe or Tube —Pittsburgh Seamless is the product of one Company's Resources and Skill . . .



First THE ORE

From company mines comes carefully selected ore—the first step in Pittsburgh Seamless perfection.

More than twenty-five years devoted exclusively to the development and manufacture of *seamless steel pipe and tubing*, together with facilities covering every step in the process of manufacture, from raw materials to finished product, make Pittsburgh Seamless a product of outstanding superiority.

Pittsburgh Steel Products Co.

DIVISION OF Pittsburgh Steel Co.

Pittsburgh New York Houston Chicago St. Louis Detroit Tulsa

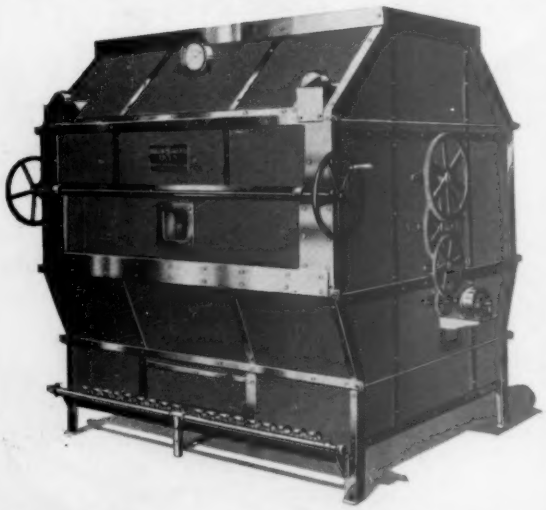
Pittsburgh Seamless

Casing
Oil Well Tubing
Drill Pipe
Line Pipe

Sizes ½" to 14" O.D., *Lengths up to 45 feet*, depending on Size and Wall Thickness.

Largest Manufacturers of Seamless Steel Pipe and Tubing Exclusively

The All-Purpose Gas Oven



For all baking operations, THE MEEK REEL OVEN, embodying the perfected principle of "motion in baking" is without a peer. Write us, telling us your problem. Our experience with thousands of oven users will be at your disposal. Ask for catalog.

The Bruce McDonald Co.,
2015 Washington St.,
KANSAS CITY, MO.

HYTEMPITE

(Reg. U. S. Pat. Off.)

"The Universal High Temperature Cement"

For Gas Plants

—insures quick, economical repairs of Retorts, Jamb Joints, Furnace Walls, Arches and Baffles

—can be used with salvaged, crushed old fire brick

—is not affected by heating and cooling of ovens.

—stands up under severe weather conditions.

—makes thin, strong joint between tile or brick that stands up under extreme abrasive action of clinker tools.

—is easily shot into place with Quigley Refractory Gun.

Keep a drum of HYTEMPITE in Retort House or Boiler Room for quick repairs.

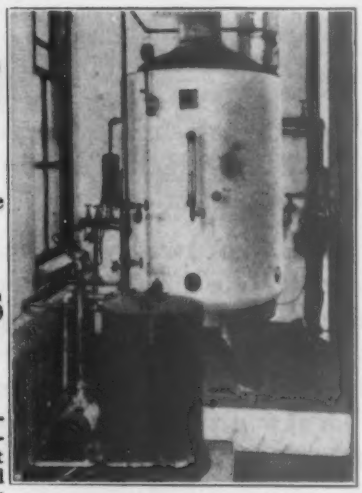
Quigley Furnace Specialties Co., Inc.
56 West 45th Street New York, N. Y.
Stock and Service in every Industrial Center.
HYTEMPITE is a Quigley Product.

LATTNER

Gas-Fired High Pressure Automatic Steam

BOILERS

for



Clothing Manufacturers—for garment presses and steam irons;
Laundries—for laundry equipment and pressing machines,
Restaurants and Hotels—for steam tables, coffee urns, etc.,
Hospitals—for sterilizing equipment; for kitchen and laundry equipment;
Candy Manufacturers—for steam kettles;
Bakeries—for humidifying air in ovens and for steam proof boxes,
Bottling Plants & Dairies—for cleaning and sterilizing;
Printing Establishments—for heating matrix tables.

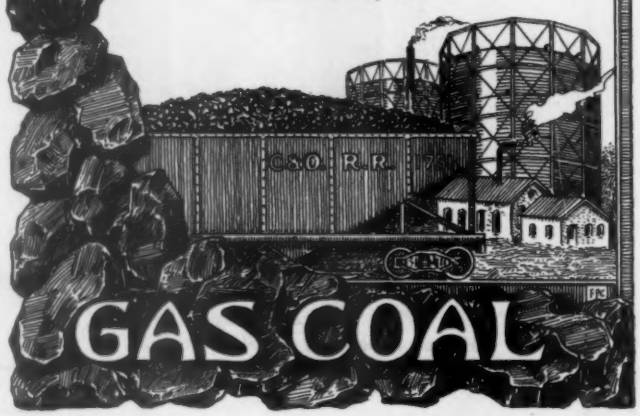
P. M. LATTNER MFG. COMPANY
Cedar Rapids, Iowa

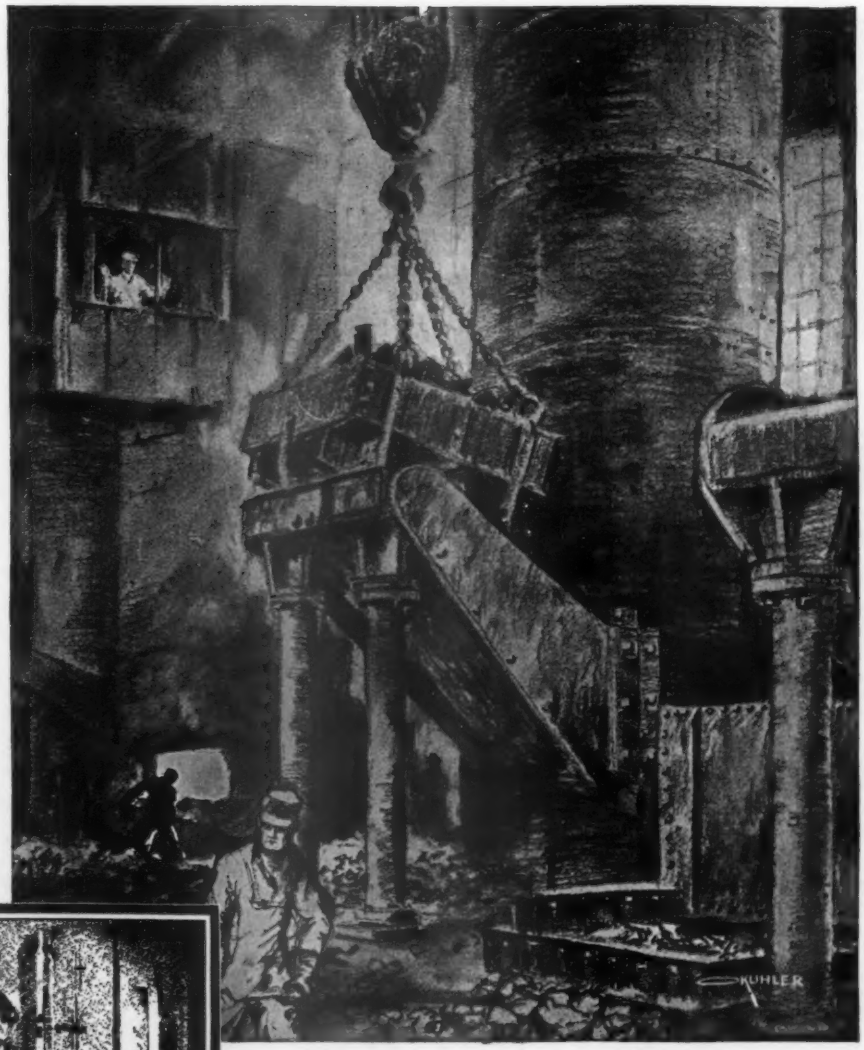
LOGAN-CHILTON

The Standard Bituminous Coal for Water and Coal Gas Manufacture

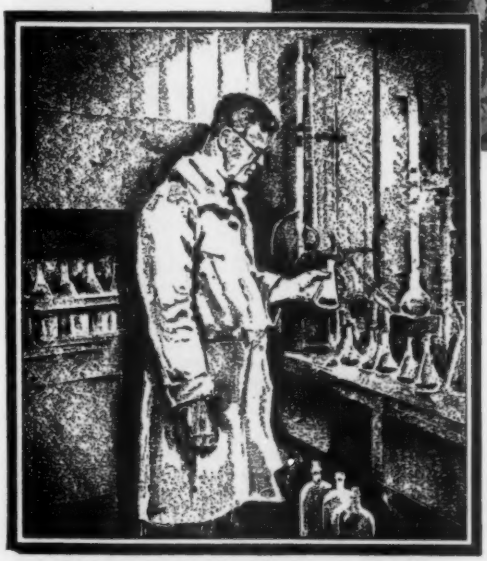
Low in Ash and Sulphur. High Calorific Value Gas and High Yield of By-Products.
We will welcome your request for complete data on actual tests, freight rates, or any other information.

• Logan County Coal Corp.
Union Central Building,
Cincinnati, Ohio.





The foundry metallurgist is aware of the effect of every non-ferrous element. By determining and controlling the percentages of these elements, he gives to the iron the characteristics most desirable for his particular needs.



ENGINEERS and contractors who would know the reason for the uniform quality of cast iron pipe should visit a modern foundry. They should go through the plant laboratories where skilled metallurgists patiently analyse pipe borings to check the percentages of phosphorus, silicon and carbon. They should examine the accurately machined molds and observe how the cores are automatically centered. Indeed, after a close observation of present-day cast iron pipe manufacturing methods, one realizes that the high quality of every length is a scientific certainty.

* * *

The Cast Iron Pipe Research Association is a service organization of leading pipe founders, formed to promote the scientific improvement and proper use of Cast Iron Pipe. Pipe bearing the Association "Q-check" mark may be obtained from the following: American Cast Iron Pipe Co., Birmingham, Ala.; James B. Clow & Sons, 219 N. Talman Ave., Chicago, Ill.; Donaldson Iron Company, Emaus, Pa.; Glamorgan Pipe and Foundry Co., Lynchburg, Va.; Lynchburg Foundry Company, Lynchburg, Va.; National Cast Iron Pipe Company, Birmingham, Ala.; United States Cast Iron Pipe & Foundry Company, Burlington, N. J.; Warren Foundry and Pipe Company, 11 Broadway, New York City.

The "Q-check" symbol shown above has been adopted as the trade mark of The Cast Iron Pipe Research Association. Insist on this "Q-check" mark when specifying cast iron pipe for gas, water, sewer or industrial service. For complete information write to The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, People's Gas Building, Chicago.

CAST IRON PIPE

Buyers' Reference Index

See page 119 for advertisements of these products

A. B. C. SELF CLINKERING GRATES
The Western Gas Construction Company.

ACCUMULATORS—STEAM
The Gas Machinery Co.
Kuth's Steam Accumulator Co.
A. O. Smith Corp.
Smoot Engineering Corp.
The Western Gas Construction Company.
United Engineers & Constructors, Inc.

ACETYLENE
The Prest-O-Lite Co., Inc.
Oxweld Acetylene Co.

ACETYLENE EQUIPMENT
American Lava Corp.

ACCOUNTING MACHINES
Remington Rand, Inc.

AMMONIA CONCENTRATORS
Bartlett Hayward Co.
Cruse-Kemper Co.
The Gas Machinery Co.
Isbell-Porter Company.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
John S. Unger.
The Western Gas Construction Company.

AMMONIA CONCENTRATED LIQUOR PLANTS
The Gas Machinery Co.
Semet-Solvay Engineering Corp.

AMMONIA PIPE
National Tube Company.

AMMONIA RECOVERY APPARATUS
The Koppers Construction Co.
Semet-Solvay Engineering Corp.
The Western Gas Construction Company.

AMMONIA STILLS
Bartlett-Hayward Co.
Cruse-Kemper Co
The Gas Machinery Co.
Isbell-Porter Company.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
John S. Unger.
The Western Gas Construction Company.

AMMONIA TEST
American Meter Co.

APPRAISALS & INVENTORIES
Stacey Bros. Gas Construction Co.
United Engineers & Constructors, Inc.

APPARATUS
Laboratory Experimental
American Meter Co.
Service
American Meter Co.

ASH STORAGE BINS
C. W. Hunt Co., Inc.
Semet-Solvay Engineering Corp.
Riter-Conley Co.
The Stacey Mfg. Co.

AUDITS
United Engineers & Constructors, Inc.

AUTOMATIC CONTROLS FOR WATER GAS APP.
The Brown Instrument Co.
United Engineers & Constructors, Inc.

AUTOMATIC RAILWAYS
C. W. Hunt Co., Inc.

BACK PRESSURE VALVES
Connelly Iron Sponge & Governor Co.

BACKRUN GAS EQUIPMENT
Semet-Solvay Engineering Corp.

BAGS
Safety Gas Main Stopper Co.

BAROMETERS
Connelly Iron Sponge & Governor Co.
Consolidated Ashcroft Hancock Co., Inc.
Precision Thermometer & Instrument Company.
Taylor Instrument Companies

BENCHES
Improved Equipment-Russell Engineering Corp.
Isbell-Porter Company.
The Gas Machinery Co.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

BENZOL
Bartlett-Hayward Co.
Indugas, Inc.
The Koppers Construction Co.

BENZOL RECOVERY PLANTS
Semet-Solvay Engineering Corp.

BLOWERS
Connersville Blower Co., The.
Gas Engineering Co.
The Gas Machinery Co.
Pittsburgh Equitable Meter Co.
The P. H. & F. M. Roots Company.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

BLUE GAS PLANT
Bartlett-Hayward Co.
Indugas, Inc.
Gas Engineering Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

BOILERS (GAS FIRED)
P. M Lattner Mfg. Co.

BOILERS—WASTE HEAT
Bartlett-Hayward Co.
Combustion Engineering Corpn.
Improved Equipment-Russell Engineering Corp.
Isbell-Porter Company.
United Engineers & Constructors, Inc.
West Gas Improvement Co.
The Western Gas Construction Company.

BOOKKEEPING MACHINES
Remington Rand, Inc.

BOOSTERS
Connelly Iron Sponge & Governor Co.
Connersville Blower Co., The

BRICK
Fire and Checker
Botfield Refractories Co.
The Gas Machinery Co.
General Refractories Co.
Improved Equipment Co.-Russell Eng. Corp.
United Engineers & Constructors, Inc.
United States Refractories Corp.
Silica
The Gas Machinery Co.
Improved Equipment-Russell Engineering Corp.
E. J. Lavino & Company.
United States Refractories Corp.

BRUSHES, PIPE CLEANING
Safety Gas Main Stopper Co.

B. T. U. INDICATORS
Alpha-Lux Co.

BUILDINGS
United Engineers & Constructors, Inc.

BURNERS (Industrial)
American Lava Corp.
The C. M. Kemp Mfg. Co.
Conversion
Cleveland Gas Burner & Appliance Co.
Conversion House Heating
Roberts Gas Burner Corp.
Fuel
Cleveland Gas Burner & Appliance Co.

BY-PRODUCT COKE
Semet-Solvay Co.

BY-PRODUCT PLANTS
Bartlett-Hayward Co.
Indugas, Inc.
The Gas Machinery Co.
International Coal Carbonization Co.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
West Gas Improvement Co.

CABLE RAILWAYS
C. W. Hunt Co., Inc.
Alpha-Lux Company.
American Meter Co.
Consolidated Ashcroft Hancock Inc., Co.

CALORIMETERS
John J. Griffin & Company.

CALORIMETER ACCESSORIES
American Meter Co.

CARBIDE
Union Carbide Sales Co.

CARBONIZATION
The Gas Machinery Co.
Low Temperature
International Coal Carbonization Co.

CARBURETTED WATER GAS
The Western Gas Construction Co.

CARBURETTED WATER GAS PLANTS
Bartlett-Hayward Co.
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.

CARS
C. W. Hunt Co., Inc.

CASINGS, SEAMLESS STEEL
National Tube Co.

CAST IRON PIPE
Bell
Cast Iron Pipe Research Ass'n.
Spigot
Cast Iron Pipe Research Ass'n.

CEMENTS
Acid-proof
Botfield Refractories Company.
General Refractories Co.
Quigley Furnace Spec. Co., Inc.
Firebrick
Botfield Refractories Company.
General Refractories Co.
Improved Equipment-Russell Engineering Corp.
United States Refractories Corp.
High Temperature
Alpha-Lux Company.
Botfield Refractories Company.
General Refractories Co.
E. J. Lavino & Co.
Quigley Furnace Spec. Co., Inc.
United States Refractories Corp.
Refractory
Botfield Refractories Company.
General Refractories Co.
Improved Equipment-Russell Engineering Corp.
E. J. Lavino & Co.
Refractory Engineering Corp.
United States Refractories Corp.

CHAMBER OVENS
United Engineers & Constructors, Inc.

CHARGING MACHINERY
Bartlett-Hayward Co.
The Gas Machinery Co.
Improved Equipment-Russell Engineering Corp.
Isbell-Porter Company.
Semet-Solvay Engineering Corp.
The Western Gas Construction Company.

CHUTES
C. W. Hunt Co., Inc.
Riter-Conley Company.
Robins Conveying Belt Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.

CLAMPS (PIPE)
S. R. Dresser Mfg. Co.

CLOCKS & WATCHES, Stop
American Meter Co.

COALS
Boone County Coal Corpn.
Logan County Coal Corp.
Westmoreland Coal Co

COAL GAS APPARATUS
Bartlett-Hayward Co.
Indugas, Inc.
The Gas Machinery Co.
Improved Equipment-Russell Engineering Corp.
Isbell-Porter Company.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.
West Gas Improvement Company
The Western Gas Construction Company.

COAL & COKE BINS CASTINGS
The Koppers Construction Co.
The Stacey Mfg. Co.

COAL AND COKE HANDLING MACHINERY
Bartlett-Hayward Co.
Dry Quenching Equipment Corp.
C. W. Hunt Co., Inc.
Isbell-Porter Company.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.
United Engineers & Constructors, Inc.

COAL TAR PRODUCTS
International Combustion, Tar, and Chemical Corpn.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.

COAL TUBES
C. W. Hunt Co., Inc.
Meter
American Meter Co.
Superior Meter Co.
Service
American Meter Co.

COKE CRUSHERS
The Koppers Construction Co.

COKE QUENCHING
Dry Quenching Equipment Corp.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.

COKE RECLAMATION SYSTEMS
C. W. Hunt Co., Inc.

COMPUTERS
Heating Value
United Engineers & Constructors, Inc.

CONDENSERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Company.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
The Western Gas Construction Company.
High Duty
Stacey Bros. Gas Const. Co.
United Engineers & Constructors Inc.

CONTRACTORS' TUBS
C. W. Hunt Co., Inc.

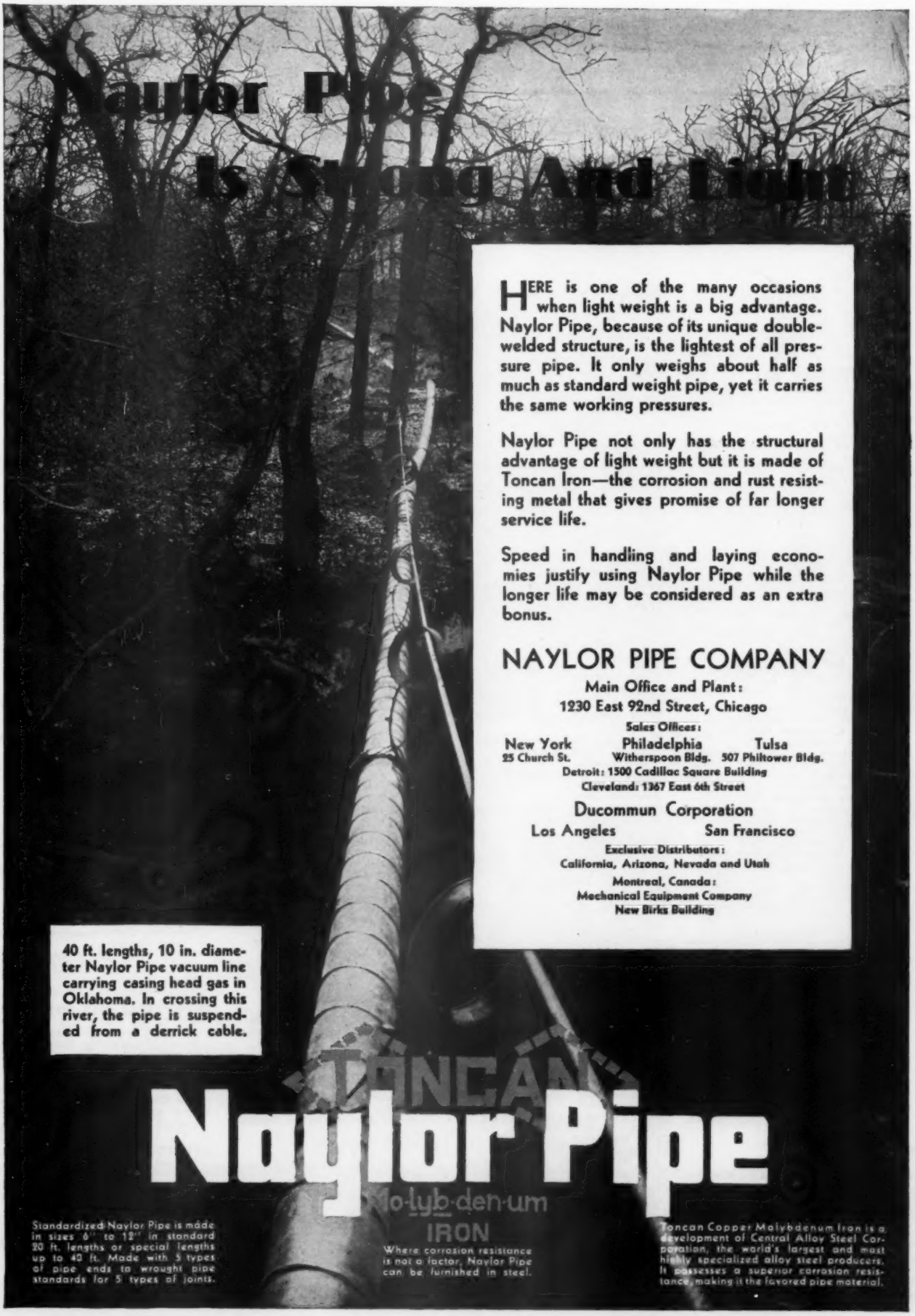
CONTROLS
The Bristol Company.
The Brown Instrument Co.
Robertshaw Thermostat Co.
Time-O-Stat Controls Co.
Combustion
Smoot Engineering Corp.
Gas Pressure
Smoot Engineering Corp.
Gas Producer
Smoot Engineering Corp.
Hot Water Heat System
The Cleveland Heater Company.
Water Gas Machine
Smoot Engineering Corp.

CONVEYORS
C. W. Hunt Co., Inc.
Isbell-Porter Company.
The Koppers Construction Co.

CONCENTRATORS, AMMONIA
(See Ammonia Concentrators.)

COOLERS
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
The Western Gas Construction Company.
Air
Andale Company.
Ammonia Liquor
Andale Company.
Gas
Andale Company.
Oil
Andale Company.

COOLING COILS
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
The Western Gas Construction Company.


Naylor Pipe
Is Strong And Light
HERE is one of the many occasions when light weight is a big advantage. Naylor Pipe, because of its unique double-welded structure, is the lightest of all pressure pipe. It only weighs about half as much as standard weight pipe, yet it carries the same working pressures.
Naylor Pipe not only has the structural advantage of light weight but it is made of Toncan Iron—the corrosion and rust resisting metal that gives promise of far longer service life.
Speed in handling and laying economies justify using Naylor Pipe while the longer life may be considered as an extra bonus.
NAYLOR PIPE COMPANY
Main Office and Plant:
1230 East 92nd Street, Chicago
Sales Offices:
New York 25 Church St.
Philadelphia Witherspoon Bldg.
Tulsa 507 Philtower Bldg.
Detroit: 1500 Cadillac Square Building
Cleveland: 1367 East 6th Street
Ducommun Corporation
Los Angeles
San Francisco
Exclusive Distributors:
California, Arizona, Nevada and Utah
Montreal, Canada:
Mechanical Equipment Company
New Birks Building
40 ft. lengths, 10 in. diameter Naylor Pipe vacuum line carrying casing head gas in Oklahoma. In crossing this river, the pipe is suspended from a derrick cable.
TONCAN
Naylor Pipe
Mo-lyb-den-um
IRON
Standardized Naylor Pipe is made in sizes 6" to 12" in standard 20 ft. lengths or special lengths up to 40 ft. Made with 5 types of pipe ends to wrought pipe standards for 5 types of joints.
Where corrosion resistance is not a factor, Naylor Pipe can be furnished in steel.
Toncan Copper Molybdenum Iron is a development of Central Alloy Steel Corporation, the world's largest and most highly specialized alloy steel producers. It possesses a superior corrosion resistance, making it the favored pipe material.

Buyers' Reference Index

See page 119 for advertisements of these products

COUPLINGS
Bartlett-Hayward Co.
S. R. Dresser Mfg. Co.
National Tube Co.
Pittsburgh Equitable Meter Co.
The P. H. & F. M. Roots Company.
Victaulic Co. of Amer.

COUPLINGS—FLEXIBLE
The P. H. & F. M. Roots Company.

CUTTING APPARATUS & SUPPLIES
Union Carbide & Carbon Co.

CRUSHERS
Riter-Conley Company.

CUBIC FOOT BOTTLES
American Meter Co.
Lambert Meter Co.

DE-EMULSIFIERS
Semet-Solvay Engineering Corp.
The Western Gas Construction Company.

DEHYDRATORS, GAS
Andale Company.
Semet-Solvay Engineering Corp.
West Gas Improvement Co.
The Western Gas Construction Company.

DEMONSTRATION METERS
Lambert Meter Co.

DIAPHRAGMS
Lambert Meter Co.
(Meter)
American Meter Co.

DISCHARGING MACHINERY
Bartlett-Hayward Co.
Improved Equipment-Russell Engineering Corp.
Semet-Solvay Engineering Corp.

DRAFT GAUGES
Brown Instrument Co., The
Consolidated Ashcroft Hancock Co., Inc.
Precision Thermometer & Instrument Company.
Taylor Instrument Companies.

DRYERS (Laundry)
W. E. Lamneck Co.

ELECTRIC LOCOMOTIVES
C. W. Hunt Co., Inc.

ELEVATORS
C. W. Hunt Co., Inc.
Craig Ridgway & Son Co.
Robins Conveying Belt Co.

ENGINE INDICATORS
Consolidated Ashcroft Hancock Co., Inc.

ENGINEERS
American Meter Co.
The Gas Machinery Co.
Combustion
Bartlett-Hayward Co.
The C. M. Kemp Mfg. Co.
Smoot Engineering Corp.
United Engineers & Constructors, Inc.
Consulting
Bartlett-Hayward Co.
Edw. A. Dieterle
United Engineers & Constructors, Inc.
George H. Waring.
The Western Gas Construction Company.
Contracting
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Company.
C. W. Hunt Co., Inc.
Isbell-Porter Company.
Riter-Conley Company.
Stacey Gros. Gas Const. Co.
United Engineers & Constructors, Inc.
West Gas Improvement Co.
The Western Gas Construction Company.
Distribution
United Engineers & Constructors, Inc.
Measurement
American Meter Co.

EXHAUSTERS
Connersville Blower Co., The
The Gas Machinery Co.
Isbell-Porter Company.
The P. H. & F. M. Roots Company.
The Western Gas Construction Company.

EXPANSION BENDS
The Gas Machinery Co.
Semet-Solvay Engineering Corp.

FILES (Steel and Wood)
Remington Rand, Inc.

FILES (Visible)
Remington Rand, Inc.

FILTERS, Gas
American Meter Co.

FIREBRICK, CEMENT
General Refractories Co.
Quigley Furnace Specialties Co., Inc.

FIREBRICK CHECKER BRICK (See Brick)
Botfield Refractories Company.
The Gas Machinery Co.
General Refractories Co.
Improved Equipment-Russell Engineering Corp.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

FIRST AID EQUIPMENT
United Engineers & Constructors, Inc.

FITTINGS
Isbell-Porter Company.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
U. S. Cast Iron Pipe and Foundry Co.
The Western Gas Construction Company.
Plain End and Flanged
Cast Iron Pipe Research Association.

FIXTURES
American Lava Corp.

FLOORS, IRON, BRICK, AND STEEL
The Gas Machinery Co.
Riter-Conley Company.
Semet-Solvay Engineering Corp.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

FLOW METERS
Brown Instrument Co., The
Lambert Meter Co.

FLUE PIPE (Cast Iron Oval)
James B. Clow & Sons.
Semet-Solvay Engineering Corp.

FURNACES
Combustion Engineering Corpn.
James B. Clow & Sons.
Gas Fired
The C. M. Kemp Mfg. Co.
Gas Soldering
American Meter Co.

GAS ANALYSIS APPARATUS
Metric Metal Works.

GASKETS
American Meter Co.
Consolidated Ashcroft Hancock Co., Inc.
Pittsburgh Equitable Meter Co.

GAS COAL
Boone County Coal Corpn.
Pittsburgh Coal Co.
Westmoreland Coal Co.

GASOMETERS (Test)
American Meter Co.

GAS PLANTS, COMPLETE
Indugas, Inc.
Gas Engineering Co.
Isbell-Porter Company.
United Engineers & Constructors, Inc.
West Gas Improvement Co.

GASSING MACHINE
American Meter Co.
Lambert Meter Co.

GAS TAPE
Connelly Iron Sponge & Governor Co.

GAS TESTING APPARATUS
Metric Metal Works.

GATE VALVES (See Valves)

GATES—WIND & BLAST
The P. H. & F. M. Roots Company.

GAUGE BOARDS
The Bristol Company.
Brown Instrument Co., The
Connelly Iron Sponge & Governor Co.
The Gas Machinery Co.
Lambert Meter Co.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

GAUGES
American Meter Co.
The Bristol Company.
Brown Instrument Co., The
Connelly Iron Sponge & Governor Co.
The Gas Machinery Co.
Lambert Meter Co.
Maryland Meter Co.
Metric Metal Works.
Pittsburgh Equitable Meter Co.
The P. H. & F. M. Roots Company.
Taylor Instrument Companies.
Tagliabue Mfg. Co., C. J.
The Western Gas Construction Company.
Mercury
Precision Thermometer & Instrument Company.
Pressure-Recording
Consolidated Ashcroft Hancock Co., Inc.
D. McDonald & Co.
Precision Thermometer & Instrument Company.
Tagliabue Mfg. Co., C. J.
Siphon
Precision Thermometer & Instrument Company.
Tank
Precision Thermometer & Instrument Company.
Water
Precision Thermometer & Instrument Company.

GLOVES
Rubber
Safety Gas Main Stopper Co.

GOVERNORS
Pittsburgh Equitable Meter Co.
Automatic
The Chaplin Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Groble Gas Regulator Co.
Reynolds Gas Regulator Co.
Smoot Engineering Corp.
The Sprague Meter Co.

GOVERNORS (Calorimeter and Double Dry)
American Meter Co.
Coke Oven
The Chaplin Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
The Gas Machinery Co.
Reynolds Gas Regulator Co.
Smoot Engineering Corp.
District
The Chaplin Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Groble Gas Regulator Co.
Helme & McIlhenny.
Isbell-Porter Co.
Smoot Engineering Corp.
Exhauster
Connelly Iron Sponge & Governor Co.
Connersville Blower Co., The
The Gas Machinery Co.
Isbell-Porter Co.
The P. H. & F. M. Roots Company.
Smoot Engineering Corp.
High Pressure
The Chaplin Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Groble Gas Regulator Co.
Reynolds Gas Regulator Co.
Smoot Engineering Corp.
The Sprague Meter Co.
Laboratory
American Meter Co.
Connelly Iron Sponge & Governor Co.
Lambert Meter Co.
D. McDonald & Co.
Reynolds Gas Regulator Co.
Low Pressure
The Chaplin Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Groble Gas Regulator Co.
Lambert Meter Co.
Reynolds Gas Regulator Co.
Smoot Engineering Corp.
The Sprague Meter Co.
Retort House
Isbell-Porter Company.
Station
Helme & McIlhenny.

GRATES for Water Gas Generators
Semet-Solvay Engineering Corp.

GRAVITOMETERS
Precision Thermometer & Instrument Company.

GRIDS, for Scrubbers
Semet-Solvay Engineering Corp.

HEATERS
Feed Water
Andale Company.
House
American Gas Products Corp.
Cleveland Gas Burner & Appliance Co.
The Cleveland Heater Company.
American Stove Company.
Homestead Heater Company.
Welsbach Company.
The Cleveland Heater Company.
Humphrey Company.
Kompak Company.
Welsbach Company.
Pittsburg Water Heater Co.

HIGH CAPACITY METERS
Lambert Meter Co.

HIGH PRESSURE PIPE LINES
The Western Gas Construction Company.

HOISTS
The Gas Machinery Co.
C. W. Hunt Co., Inc.

HOLDERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
Riter-Conley Company.
Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.

HOPPERS—COAL AND COKE
Bartlett-Hayward Co.
Cruse-Kemper Co.
C. W. Hunt Co., Inc.
Riter-Conley Company.
The Stacey Mfg. Co.

HOTELS
Shelburne Hotel.

HOWARD AUTOMATIC CHARGERS
The Western Gas Construction Company.

HYDROGEN GAS APPARATUS
Bartlett-Hayward Co.
Gas Engineering Co.
Improved Equipment-Russell Engineering Corp.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.

HYDROGEN SULPHITE TEST (Apparatus)
American Meter Co.

HYDROMETERS
The Brown Instrument Co.
Precision Thermometer & Instrument Company.
Taylor Instrument Companies.

INCINERATORS, GAS-FIRED
Home Incinerator Co.
Kernit Incinerator Co.

INDUSTRIAL GAS MIXERS
The C. M. Kemp Mfg. Co.
Roberts Gas Burner Corp.
Smoot Engineering Corp.

INDUSTRIAL TRACK
C. W. Hunt Co., Inc.

IRON BORING OXIDE
Gas Purifying Materials Co., Inc.

IRON SPONGE
Connelly Iron Sponge & Governor Co.

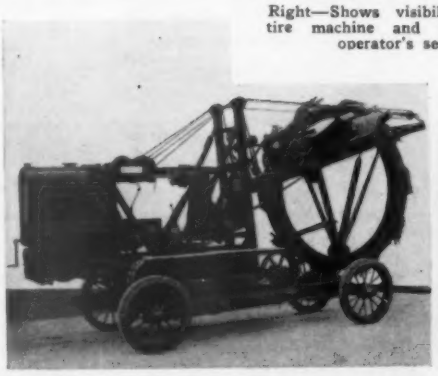
INSTRUMENTS
Alpha-Lux Company.
The Bristol Company.
Brown Instrument Co., The
Consolidated Ashcroft Hancocs Co., Inc.
Lambert Meter Co.
Metric Metal Works.
Precision Thermometer & Instrument Company.
Taylor Instrument Companies.
Time-O-Stat Controls Co.

PIONEERING ... *in the distinctive Trenching features that count*

Above—Baby Digger cutting trench through mica rock and gravel.

Left—On its own trailer ready to go to next job.

Right—Shows visibility of entire machine and work from operator's seat.



The Cleveland Trencher Company has pioneered in the Baby Digger many important features that have brought it recognition as the ideal trencher for gas line uses.

Extreme Compactness. All unnecessary bulk is eliminated. Overall dimensions are only 58 inches in width, 19 feet in length and but 8 feet 2 inches in height. Thus, it operates in cramped quarters and slips easily past poles, trees, hydrants, etc.

Maximum Mobility. All unnecessary weight is eliminated. Loads on its special trailer in five minutes for travel to next job at truck speed. Violates no highway regulations. Greatly decreases the non-productive time of your trencher.

Wheel Type Trenching, Full Crawler Mounted. The known power, speed and economy of wheel type digging are coupled with the flexibility of full crawler mounting, thus giving maximum efficiency.

Visible Digging. Controls are situated so that the operator can at all times actually see both the work he is doing and all parts of the machine. A distinctive feature and an undeniable advantage.

Finger-Tip Control. Digging depth is controlled through planetary-type transmission, with single lever, permitting ½" adjustments—steering and speed changes are also made instantaneous through single levers.

Special-Alloy, Heat-Treated Steels Used Throughout. All gears, shafting, sprockets, etc., are made of these special steels designed for maximum strength and wear.

Thorough Use of Roller, Timken and Ball Bearings Throughout. This assures less friction and adds greatly to the life of the machine.

Enclosed Worm Gear Reduction Units Run in oil—conserve power and eliminate many working parts.

Low Fuel Consumption. The Baby Digger burns but a gallon of gasoline per working hour—a considerable saving when spread over a season's operation.

You can use the Baby Digger with profit—write us for the complete story.

THE CLEVELAND TRENCHER COMPANY

"Pioneers of the Small Trencher"

20100 St. Clair Avenue **Cleveland, Ohio**

THE BABY DIGGER

Buyers' Reference Index

See page 119 for advertisements of these products

Recording
American Meter Co.

JOINTS (Pipe)
S. R. Dresser Mfg. Co.
Southwestern Pipe Joint & Engr. Co.
U. S. Cast Iron Pipe & Foundry Co.
Insulating
United Engineers & Constructors, Inc.
Victaulic Co. of Amer.

JOINT RUNNERS
Safety Gas Main Stopper Co.

LAMP POSTS
General Gas Light Co.

LAUNDRY EQUIPMENT
W. E. Lamneck Co.

LAVA BURNER GRIDS
American Lava Corp.

LAVA PILOT TIPS
American Lava Corp.

LINING—REFRACTORY
(See Refractory Linings

LOCKERS
Remington Rand Co.

LOOSE LEAF EQUIPMENT
Remington Rand Co.

LUX MATERIAL
Alpha-Lux Company.

LUX SPONGE
Alpha-Lux Company.

MANILA AND WIRE ROPE
C. W. Hunt Co., Inc.

MANOMETERS
Brown Instrument Co., The
Precision Thermometer & Instrument Company.

MANTLES
General Gas Light Co.
Welsbach Company.

MASKS—GAS
Safety Gas Main Stopper Co.

MAST & GAFF OUTFITS
C. W. Hunt Co., Inc.

MEASURING CHUTES
C. W. Hunt Co., Inc.

MECHANICAL GENERATORS for Water Gas App.
United Engineers & Constructors, Inc.

METER CONNECTIONS
American Meter Co.
Bartlett-Hayward Co.
S. R. Dresser Mfg. Co.
Lambert Meter Co.
D. McDonald & Co.
Maryland Meter Works.
Pittsburgh Equitable Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works.

METER REPAIRING
Lambert Meter Co.

METER TESTER, Hydro-Pneumatic
American Meter Co.

METERS
Brown Instrument Co., The
Pittsburgh Equitable Meter Co.
Air
American Meter Co.
Connersville Blower Co., The
The Gas Machinery Co.
Lambert Meter Co.
D. McDonald & Co.
Metric Metal Works.
The P. H. & F. M. Roots Company.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.
Artificial
American Meter Co.
Connersville Blower Co., The
Helme & McIlhenny.
Lambert Meter Co.
Maryland Meter Works.
D. McDonald & Co.
Metric Metal Works.
The P. H. & F. M. Roots Company
The Sprague Meter Co.
Nathaniel Tufts Meter Works.
Demand
American Meter Co.
Connersville Blower Co., The
John J. Griffin & Company.
Lambert Meter Co.
D. McDonald & Co.
The P. H. & F. M. Roots Company.
Superior Meter Co.
Demonstration
American Meter Co.
Dry
American Meter Co.
John J. Griffin & Company.
Lambert Meter Co.
Maryland Meter Works.
D. McDonald & Co.
Metric Metal Works.
The P. H. & F. M. Roots Company.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works.
Exhibition
American Meter Co.
Natural Gas
American Meter Co.
Connersville Blower Co., The
John J. Griffin & Company.
Helme & McIlhenny.
Lambert Meter Co.
Maryland Meter Works.
D. McDonald & Co.
Metric Meter Works.
The P. H. & F. M. Roots Company.
The Sprague Meter Co.
Superior Meter Co.
Oil
American Meter Co.
Connersville Blower Co., The
The Gas Machinery Co.
Orifice
American Meter Co.
Positive
The Sprague Meter Co.
Prepayment
American Meter Co.
John J. Griffin & Company.
Maryland Meter Works.
D. McDonald & Company.
Metric Metal Works.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works.
Proportional
The P. H. & F. M. Roots Company.
Station
American Meter Co.
Connersville Blower Co., The
John J. Griffin & Company.
Maryland Meter Works.
D. McDonald & Co.
Metric Metal Works.
The P. H. & F. M. Roots Company.
Nathaniel Tufts Meter Works.
The Western Gas Construction Company.
Steam
American Meter Co.
The Gas Machinery Co.
United Engineers & Constructors Inc.
The Western Gas Construction Company.
Test
American Meter Co.
John J. Griffin & Company.
Maryland Meter Works.
D. McDonald & Company.
Metric Metal Works.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works.
Wet Test
American Meter Co.

METER LEATHER
Besse, Osborn and Odell, Inc.

MILLER GRIP PACKING
Connelly Iron Sponge & Governor Co.

MIXERS, GAS
Roberts Gas Burner Corp.
Semet-Solvay Engineering Corp.
Smoot Engineering Corp.

MOISTURE DETERMINATORS
United Engineers & Constructors, Inc.

MOTOR CARS
C. W. Hunt Co ,Inc.

NAPHTHALENE EXTRACTORS
Bartlett-Hayward Co.
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
The Western Gas Construction Company.

OFFICE FURNITURE
Remington Rand, Inc.

ORE, CHROME
E. I. Lavino & Co.

OVENS (REEL TYPE BAKE)
The Bruce McDonald Co.

OVENS—COKE AND GAS
Indugas, Inc.
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.

OXIDE
Alpha-Lux Company.
Connelly Iron Sponge & Governor Co.
Gas Purifying Materials Co., Inc.
E. J. Lavino & Co.

OXYGEN
Linde Air Products Co.

OXYGEN AND HYDROGEN METERS
Lambert Meter Co.

PACKING
Asbestos
Safety Gas Main Stopper Co.

PAINTS
Cheesman-Elliott Co.
Safety Gas Main Stopper Co.
The Stacey Mfg. Co.
Wailes Dove-Hermiston Corp.
Metal Protective
Semet-Solvay Co.

PAINTS, ANTI ACID AND ALKALI
Cheesman-Elliott Co.
Quigley Furnace Spec. Co., Inc.

PAINTS, RUSTPROOF
Cheesman-Elliott Co.
Quigley Furnace Spec. Co., Inc.

PHOTOMETERS
Connelly Iron Sponge & Governor Co.

PILOTS-SAFETY
Time-O-Stat Controls Co.

PIPE
Waylow Pipe Co.
Hedges-Walsh-Weidner Co.
National Tube Co.
The Stacey Mfg. Co.
Bell
American Meter Co.
Semet-Solvay Engineer.ng Corp.
McWane Cast Iron Pipe Co.
Bell and Spigot
U. S. Cast Iron Pipe & Foundry Co.
Cast Iron
McWane Cast Iron Pipe Co.
U. S. Cast Iron Pipe & Foundry Co.
Flange
Semet-Solvay Engineering Corp.
U. S. Cast Iron Pipe & Foundry Co.
Screw Joint Cast Iron Pipe
McWane Cast Iron Pipe Co.
Seamless Steel
Pittsburgh Steel Products Co.
Spigot
McWane Cast Iron Pipe Co.
Semet-Solvay Engineering Corp.
A. O. Smith Corp.
Naylor Pipe Co.
Steel
Bartlett-Hayward Co.
Cruse-Kemper Co.
The Gas Machinery Co.
National Tube Co.
Pittsburgh Steel Products Co.
Riter-Conley Company.
Semet-Solvay Engineering Corp.
A. O. Smith Corp.
Spiral Welded Pipe
Naylor Pipe Co.
Welded Steel
Bartlett-Hayward Co.
Cruse-Kemper Co.
The Gas Machinery Co.
National Tube Co.
Riter-Conley Company.
Semet-Solvay Engineering Corp.
A. O. Smith Corp.

PIPE COATINGS
Wailes-Dove-Hermiston Corp.

PLANTS—GAS, COMPLETE
The Gas Machinery Co.
Improved Equipment-Russell Engineering Corp.
The Koppers Construction Co.
Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.

West Gas Improvement Co.
The Western Gas Construction Company.

PLATES
Cruse-Kemper Co.
C. W. Hunt Co., Inc.
The Stacey Mfg. Co.
The Western Gas Construction Company.
Floor
Gas Engineering Co.
The Gas Machinery Co.
Riter-Conley Company.
United Engineers & Constructors, Inc.

PLUGS, SERVICE AND MAIN
Rubber
Safety Gas Main Stopper Co.
Soft Wood
Safety Gas Main Stopper Co.

PORTABLE TEST METERS
Lambert Meter Co.

PRODUCER GAS PLANT
Gas Engineering Co.
The Koppers Construction Co.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

PRODUCER GAS STEAM
American Meter Co.

PROVERS—Critical Flow for H. P Field Testing
American Meter Co.

PROVERS—METER
John J. Griffin & Company.
Helme & McIlhenny.
Lambert Meter Co.
D. McDonald & Co.
Pittsburgh Equitable Meter Co.
Superior Meter Co.

PUMPS
Drip
American Meter Co.
The Gas Machinery Co.
Lambert Meter Co.
D. McDonald & Co.
Gas
The P. H. & F. M. Roots Company.
Gas Bag
Safety Gas Main Stopper Co.
Hand
Lambert Meter Co.
Oil
Connersville Blower Co., The
The Gas Machinery Co.
D. McDonald & Co.
The P. H. & F. M. Roots Company.
Power
Connersville Blower Co., The
The P. H. & F. M. Roots Company.
Pressure
Connersville Blower Co., The
The P. H. & F. M. Roots Company.
Service
American Meter Co.
Lambert Meter Co.
Superior Meter Co.
Service Cleaner
American Meter Co.
John J. Griffin & Company.
Lambert Meter Co.
Safety Gas Main Stopper Co.
Superior Meter Co.
Tar
Connersville Blower Co., The
The P. H. & F. M. Roots Company.
Water
Connersville Blower Co., The
The P. H. & F. M. Roots Company.
Vacuum
American Meter Co.
Connersville Blower Co., The
The P. H. & F. M. Roots Company.

PURIFIERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Company.
The Koppers Construction Co
Semet-Solvay Engineering Corp
Stacey Bros. Gas. Const. Co.
The Stacey Mfg. Co.
Riter-Conley Company.
United Engineers & Constructors Inc.
The Western Gas Construction Company.

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of the Public Utilities resulting in economies of operation have benefited the entire gas industry.

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2401 CHESTNUT STREET, PHILADELPHIA, PA.

Buyers' Reference Index

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PURIFYING MATERIALS
Alpha-Lux Company.
Connelly Iron Sponge & Governor Co.
The Gas Machinery Co.
Gas Purifying Materials Co., Inc
The Koppers Construction Co.
E. J. Lavino & Co.

PURIFIER TRAYS
Bartlett-Hayward Co.
Connelly Iron Sponge & Governor Co.
Cruse-Kemper Co.
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
United Engineers & Constructors, Inc.
The Western Gas Construction Company.

PYROMETERS
The Brown Instrument Co.
Maryland Meter Works
The Bristol Company.
The Western Gas Construction Company.
Indicating
The Gas Machinery Co.
Taylor Instrument Companies.
United Engineers & Constructors, Inc.
Radiation
Taylor Instrument Companies.
Recording
The Gas Machinery Co.
Taylor Instrument Companies.
United Engineers & Constructors, Inc.

RADIATORS
Gas Steam
American Gas Products Corp.

RANGES—GAS
American Stove Co.

RECORDERS—LIQUID LEVEL
The Brown Instrument Co.

RECORDING DEMAND METERS
The Brown Instrument Co.
Lambert Meter Co.
Maryland Meter Works

REFRACTORY CEMENTS
Botfield Refractories Company
The Gas Machinery Co.
General Refractories Co.
Improved Equipment—Russell Engineering Corp.
E. J. Lavino & Co.
Quigley Furnace Spec. Co. Inc.
United States Refractories Corp.

REFRACTORY GUN
Botfield Refractories Company
Quigley Furnace Spec. Co. Inc.

REFRACTORY LININGS
Alpha-Lux Company
Botfield Refractories Company
The Gas Machinery Co.
General Refractories Co.
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Quigley Furnace Spec. Co. Inc.
United Engineers & Constructors Inc.
The Western Gas Construction Company
United States Refractories Corp.

REGULATORS
American Meter Co.
The Brown Instrument Co.
The Chaplin Fulton Mfg. Co.
Connersville Co., The
Connelly Iron Sponge & Governor Co.
Groble Gas Regulator Co.
Isbell-Porter Co.
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
Robertshaw Thermostat Co.
Smoot Engineering Corp.
The Sprague Meter Co.
Taylor Instrument Companies
Air Pressure
Time-O-Stat Controls Co.
Smoot Engineering Corp.
Coke Oven Suction Main
Smoot Engineering Corp.
Exhauster
Smoot Engineering Corp.
Furnace Pressure
Smoot Engineering Corp.
Oven
American Stove Co.
Steam Pressure
Smoot Engineering Corp.

REPAIR PARTS
Lambert Meter Co.

RESPERATING OUTFITS
Connelly Iron Sponge & Governor Co.

RETORTS
Horizontal and Inclined
Improved Equipment—Russell Engineering Corp.
Vertical
United Engineers & Constructors Inc.
West Gas Improvement Co.
Silica and Clay
Improved Equipment—Russell Engineering Corp.
The Gas Machinery Company
United States Refractories Corp.

RETORT CEMENT
Alpha-Lux Company
Botfield Refractories Company
The Gas Machinery Co.
Improved Equipment—Russell Engineer Corp.
Quigley Furnace Spec. Co. Inc.
United States Refractories Corp.

REVERSE FLOW GOVERNORS
Connelly Iron Sponge & Governor Co.

REYNOLDS
District
Reynolds Gas Regulator Co.

RUBBER AND JUTE JOINTING MATERIALS
Southwestern Pipe Joint & Eng. Co. Inc.

SAFES
Remington Rand Inc.

SAFETY VALVES
Connelly Iron Sponge & Governor Co.

SCREENS, ELECTRIC VIBRATING
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Cruse-Kemper Company
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The Gas Machinery Co.
Isbell-Porter Co.
Semet-Solvay Engineering Corp.
Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
West Gas Improvement Co.
The Western Gas Construction Company

SERVICE BOXES
The Stacey Mfg. Co.

SERVICE CLEANERS
American Meter Co.

SERVICE PLUG-RUBBER
Connelly Iron Sponge & Governor Co.
Safety Gas Main Stopper Co.

SHELVING (Steel)
Remington Rand Inc.

SKIP HOIST
C. W. Hunt Co. Inc.

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American Meter Co.

SPECIFIC GRAVITY GAUGES
Alpha-Lux Company.

SPONGE
Alpha-Lux Company
Connelly Iron Sponge & Governor Co.
Gas Purifying Materials Co. Inc.

SPRAYS, for Water Gas Machines
Semet-Solvay Engineering Corp.

STACEY BULLETT for High Pressure Storage
Stacey Bros. Gas Construction Co.

STATION METERS (See Meters Station)

STEAM ACCUMULATORS
(See Accumulators—Steam)
The Gas Machinery Co.
Smoot Engineering Corp.
United Engineers & Constructors Inc.
The Western Gas Construction Company

STOPPERS
Safety Gas Main Stopper Co.

STRAINERS—GAS, STEAM, WATER
Andale Company

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American Meter Co.
Connelly Iron Sponge & Governor Co.
Safety Gas Main Stopper Co.

STREET LAMPS
Welsbach Street Lighting Co.

SULPHUR AND AMMONIA TEST (Apparatus)
American Meter Co.

SYSTEMS
Combustion Control
The C. M. Kemp Mfg. Co.
Smoot Engineering Corp.
Hot Water Heat Control
The Cleveland Heater Company
Time-O-Stat Controls Co.

TABULATING MACHINES
Remington Rand, Inc.

TACHOMETERS
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The Bristol Company.
Consolidated Ashcroft Hancock Co., Inc.
Precision Thermometer & Instrument Company.

TANK REGULATORS
Reynolds Gas Regulator Co.

TANKS
Bartlett-Hayward Co.
Cruse-Kemper Company.
Gas Engineering Co.
Semet-Solvay Engineering Corp.
A. O. Smith Corp.
The Stacey Mfg. Co.
The Western Gas Construction Company.
Gas, Oil, Storage
Stacey Bros. Gas Const. Co.
High Pressure
The Gas Machinery Co.
Riter-Conley Company.
Stacey Bros. Gas Const. Co.

TAPE SOAP—BINDING
Safety Gas Main Stopper Co.

TAR DISTILLING PLANTS
Indugas, Inc.
Gas Engineering Co.
The Gas Machinery Co.
Semet-Solvay Engineering Corp.
West Gas Improvement Co.

TAR DISPLACEMENT SYSTEM
The Gas Machinery Co.

TAR EXTRACTORS
Bartlett-Hayward Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Co.
Semet-Solvay Engineering Corp.
West Gas Improvement Co.
The Western Gas Construction Company.
United Engineers & Constructors, Inc.

TEMPERATURE CONTROLING DEVICE—Oven
American Stove Co.
The Bristol Company.
Brown Instrument Co., The
Consolidated Ashcroft Hancock Co., Inc.
Robertshaw Thermostat Co.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Companies.
Time-O-Stat Controls Co.

TESTING APPARATUS, GAS
American Meter Co.
Pittsburgh Equitable Meter Co.
Precision Thermometer & Instrument Company.

THERMOMETERS
American Meter Co.
The Bristol Company.
Brown Instrument Co., The
Lambert Meter Co.
D. McDonald & Co.
Metric Metal Works.
Precision Thermometer & Instrument Company.
Superior Meter Co.
Taylor Instrument Companies.

THERMOSTATS
The Bristol Company.
Brown Instrument Co., The
The Cleveland Heater Company.
Consolidated Ashcroft Hancock Co., Inc..
Precision Thermometer & Instrument Company.
Robertshaw Thermostat Co.
Taylor Instrument Companies.
Time-O-Stat Controls Co.

TOASTERS
American Gas Products Corp.
Savory Co., Inc.,

TOOLS
Semet-Solvay Engineering Corp.

TORCHES—WELDING AND CUTTING
Oxweld Acetylene Co.
Union Carbide & Carbon Co.

TRAPS—STEAM
Consolidated Ashcroft Hancock Co., Inc.,

TRENCH DIGGERS
The Cleveland Trencher Co.

TUBES, BOILER
National Tube Co.
Pittsburgh Steel Products Co.

TUBES
Seamless Steel
Pittsburgh Steel Products Co.

TYPEWRITERS
Consolidated Ashcroft Hancock Co., Inc.,
Remington Rand, Inc.

U GAUGES
American Meter Co.
Connelly Iron Sponge & Governor Co.
The Gas Machinery Co.
Lambert Meter Co.
Pittsburgh Equitable Meter Co.
Precision Thermometer & Instrument Company.
Safety Gas Main Stopper Co.
Superior Meter Co.
Taylor Instrument Companies.

VACUUM GAUGES
American Meter Co.
The Bristol Company.
Brown Instrument Co., The
Consolidated Ashcroft Hancock Co., Inc.,
Lambert Meter Co.
Pittsburgh Equitable Meter Co.
Precision Thermometer & Instrument Company.
Taylor Instrument Companies.

VALVES
Bartlett-Hayward Co.
Consolidated Ashcroft Hancock Co., Inc.,
Darling Valve and Manufacturing Co.
The Gas Machinery Co.
Groble Gas Regulator Co.
C. W. Hunt Co., Inc.
The Ludlow Valve Mfg. Co.
Pittsburgh Equitable Meter Co.
Semet-Solvay Engineering Corp.
High Pressure Special
Smoot Engineering Corp.
Time-O-Stat Controls Co.

VALVES—BY-PASS
The P. H. & F. M. Roots Company.

VALVES—DIAPHRAGM
The P. H. & F. M. Roots Company.
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VALVES & FITTINGS
Darling Valve and Manufacturing Co.
The Gas Machinery Co.
Pittsburgh Equitable Meter Co.
The P. H. & F. M. Roots Company.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.
The Western Gas Construction Company.
Time-O-Stat Controls Co.

VALVES—HUNTOON
The P. H. & F. M. Roots Company.
Time-O-Stat Controls Co.

VALVES—RELIEF
The P. H. & F. M. Roots Company.

VALVES—3 Way
Semet-Solvay Engineering Corp.

WASHING MACHINE
Perco-Steril Machine Corpn.

WASTE HEAT BOILERS
(See Boilers)
The Gas Machinery Co.
Improved Equipment-Russell Engineering Corp.
United Engineers & Constructors, Inc.
West Gas Improvement Co.
The Western Gas Construction Company.

WATER GAS APPARATUS
Bartlett-Hayward Co.
The Gas Machinery Co.
Isbell-Porter Company.
Semet-Solvay Engineering Corp.
The Stacey Mfg. Co.

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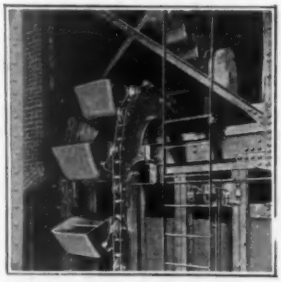

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PIVOTED BUCKET CONVEYOR

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Chicago - Montreal - Boston

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AN EXCHANGE:

burning pavements, heat-discharging stone canyons, low hanging sultriness, carbon monoxide poisoned air—for

COOL BOARDWALK PROMENADE, WIDE OPEN SPACES, OCEAN BREEZES, SALT SEA SWIMS, CLEAR, CLEAN AIR —

Exchange your urban life with its summer toll of discomfort for

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THE CHELSEA

which extends a block on the Boardwalk in the most delightful section of the city—American and European Plans—food for the gods! 10 story fireproof addition; cool rooms—all outside exposure—most face the ocean.

DO COME!

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Used since 1897

Improved Locking Sleeve

GAS MAIN STOPPER

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DEPENDABLE GAS MAIN BAGS
Type A—Seamless
Type B—Reinforced Seams
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GOODMAN CYLINDRICAL STOPPER
Inflatable for high pressures
SOAP TAPE
BRUSHES
PLUGS
JOINT RUNNERS
AIRLINE MASKS

Safety Gas Main Stopper Co.

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The Standard for Gas Making Since 1854

Since this Company commenced operations, its well-known Westmoreland "Criterion" Gas Coal has been largely used by the Gas Companies of Northeastern United States and Canada, and its character is established as having no superior in gas giving qualities and freedom from sulphur and other impurities.

Mines situated on the Pennsylvania Railroad
in Westmoreland County, Pa.

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Engineers and Contractors for Complete Gas Works

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Manufacturers of All Kinds of Gas Apparatus

NEWARK - NEW JERSEY

LAVINO OXIDE

Intensely Active. High Total Sulphur Absorption at Minimum Cost.

"THE EFFICIENT PURIFIER"

The Sponge with the large Tough Shavings Always Uniform

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NEW YORK CHICAGO PITTSBURGH

GAS ENGINEERING CO.

Manufacturers of Gas Production Equipment
TRENTON, N. J.

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GAS ENGINEER
Specialist in Ammonia Recovery
and Manufacture of Ammonia Products,
Builder of Unger Ammonia Stills
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Improved Equipment · Russell Engineering

HORIZONTAL GAS OVENS. COAL GAS PLANTS. BENCHES-STOP-ENDS & THROUGHS.

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Large Eastern Utility has vacancy for a man between 30 and 45 years of age for sales work in the use of gas for house heating. Must be a Technical High School graduate and have at least two years' sales experience in residence heating. Permanent position; excellent opportunities. Please state age, experience, education and salary desired. Address Replies to Box No. 972, c/o American Gas Journal, 53 Park Place, N. Y. C.

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$5.00 Each
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For Sale
By
American Gas
Journal

EDWARD A. DIETERLE
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American Light & Traction Company

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The Board of Directors of AMERICAN LIGHT & TRACTION COMPANY, at a meeting held July 2, 1929, declared a DIVIDEND of one and one-half per cent. (1-½%) on the Preferred Stock, and a DIVIDEND of two and one-half per cent. (2-½%) on the Common Stock, both payable August 1, 1929, to stockholders of record at the close of business July 12, 1929.

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JAMES LAWRENCE, Secretary.

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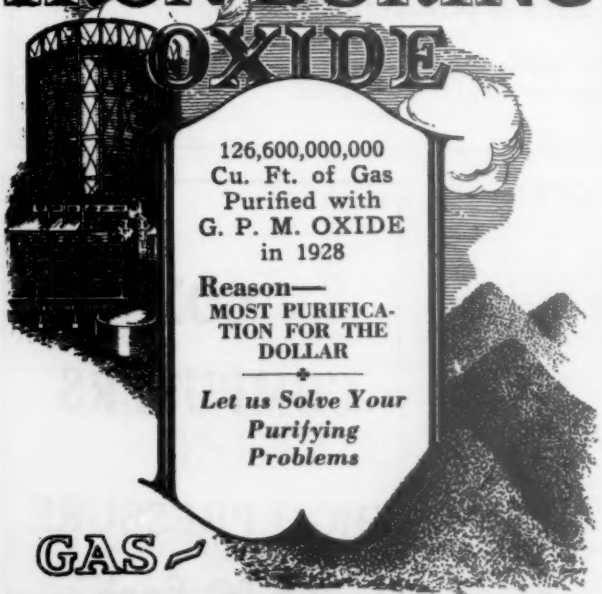
Manufacturers of GOVERNORS, APPARATUS and EQUIPMENT
IRON Connelly Iron Sponge and Governor Co. New York, Chicago U.S.A. **SPONGE**
USE THE BENEFIT OF 53 YEARS EXPERIENCE!

IRON BORING OXIDE



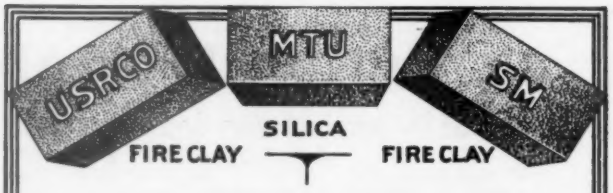
126,600,000,000 Cu. Ft. of Gas Purified with G. P. M. OXIDE in 1928

Reason— MOST PURIFICATION FOR THE DOLLAR

Let us Solve Your Purifying Problems

GAS-PURIFYING MATERIALS COMPANY INC.

FOOT OF HALSEY STREET · · · LONG ISLAND CITY
NEW YORK
BRANCH YARD—PROVIDENCE, R. I.



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FINE GROUND CLAY — SILICA CEMENT

U·S·REFRACTORIES CORPORATION
MOUNT UNION, PA. — OLIVER BLDG. PITTSBURGH.

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Radiant "Coalfires"
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Positively the last word in the practical and efficient combustion of the gases in which air and gas are mixed to the highest degree of perfection. Easily and quickly installed. Can be used on any coal-fired boiler or hot air furnace.

Patented and Manufactured Exclusively by

THE FRANKLIN GAS APPLIANCE CO.
CINCINNATI, OHIO

Pittsburg *Automatic Gas* Water Heaters and Gas Fired Boilers

The Pittsburg Water Heater Company
Pittsburgh, Pa.

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guaranteed to always run uniform. It has been used by Gasworks all over the world for nearly 50 years. We offer same from a shipping point most conveniently located to your works. Shipped in bulk or bags.

Lux-Sponge

THE PERFECT READY MIXED OXIDE

For Gasworks having no facilities to mix their own Sponge we offer our celebrated "Lux-Sponge," guaranteed efficient for Coal or Water Gas.
Samples upon request.

THE ALPHA-LUX COMPANY, Inc.
192 FRONT STREET - NEW YORK CITY, N. Y.

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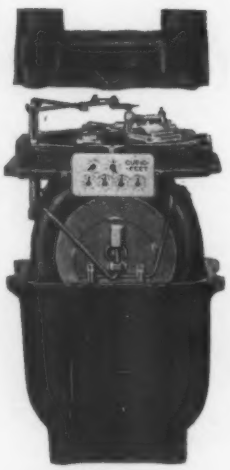
Indestructible Meter Construction

EMCO No. 0
and
IRONCLAD



A cast iron case—fireproof; knocks and excessive heat can't damage it; non-corrosive and rust-proof.

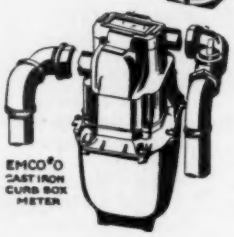
Valves that cannot tilt and wear unevenly; they are larger and more perfectly proportioned, which means longer life.

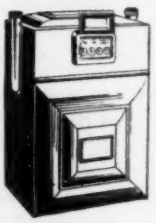
Rolling type diaphragms—made of carefully selected and specially tanned and treated sheep-skin, properly cut and formed.

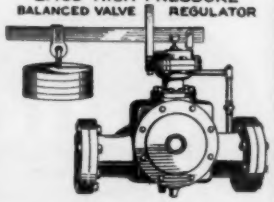
Interchangeability of all parts—reduces your inventory; In the EMCO No. 0 the entire mechanism is mounted on a removable central casting, easy to handle and interchangeable with any other EMCO No. 0 body or cover; adjustment may be made on tangent without removing cover. In the IRONCLAD all parts are interchangeable with other Ironclads.

EMCO #0 CAST IRON DRY GAS METER

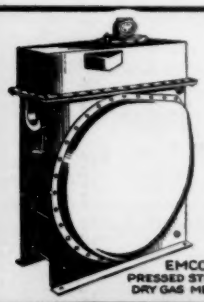
IRONCLAD CAST IRON DRY GAS METER

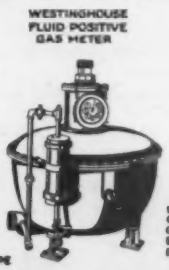

EMCO #0 CAST IRON CURB BOX METER

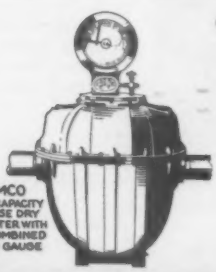

EMCO TIN METER


EMCO HIGH PRESSURE BALANCED VALVE REGULATOR

EMCO WATER HEATER AND GAS APPLIANCE REGULATOR

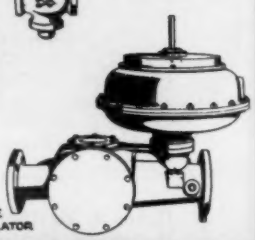

EMCO #5 PRESSED STEEL TYPE DRY GAS METER


WESTINGHOUSE FLUID POSITIVE GAS METER


EMCO LARGE CAPACITY CAST CASE DRY GAS METER WITH EMCO COMBINED RECORD GAUGE

EMCO ORIFICE GAS METER

EMCO DOMESTIC SERVICE REGULATOR


EMCO LOW PRESSURE BALANCED VALVE REGULATOR

PITTSBURGH EQUITABLE METER COMPANY

MAIN OFFICE AND WORKS PITTSBURGH, PA.

NEW YORK CHICAGO COLUMBIA, S.C. LOS ANGELES DALLAS
TULSA SEATTLE KANSAS CITY SALT LAKE CITY

Going Back to Baltimore *for*

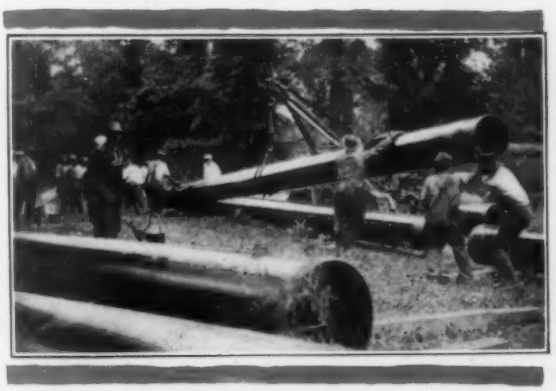
PROOF

PROVEN PROTECTION FOR PIPE LINES

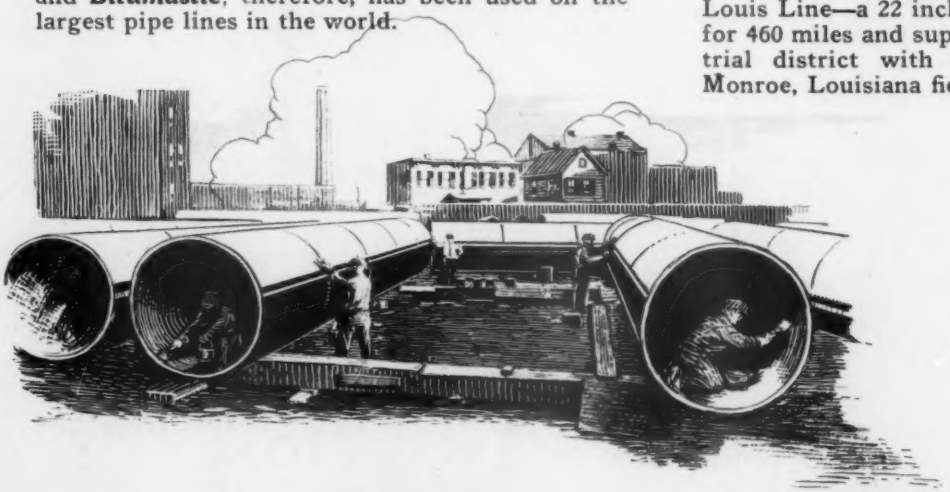
In 1915 the 84 inch steel water main laid by the Baltimore Bureau of Water Supply was coated with *Bitumastic Enamel* as a protection against corrosion.

In 1926, eleven years later, the Bureau reported that the main had been inspected at several points and "the enamel found in excellent condition." It was its conservative opinion that "*Bitumastic Enamel* affords a good protection."

When such proof of protection can be furnished for hundreds of applications of ***Bitumastic Enamel*** and for periods up to forty years of service, no mere *claim* of merit should be considered in the selection of a protective coating. A great deal of study has been given to this question—particularly in connection with big projects where millions of dollars are invested in construction of large oil and gas lines. The conclusion of these studies is invariably to choose a *proven* coating and ***Bitumastic***, therefore, has been used on the largest pipe lines in the world.



Showing ***Bitumastic Enamel*** being applied by the Turning Rig method on the new St. Louis Line—a 22 inch line which will extend for 460 miles and supply the St. Louis industrial district with natural gas from the Monroe, Louisiana fields.



We have now in preparation a new book on the protection of oil and gas pipe. Shall we reserve a copy for you?

BITUMASTIC
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ENAMEL

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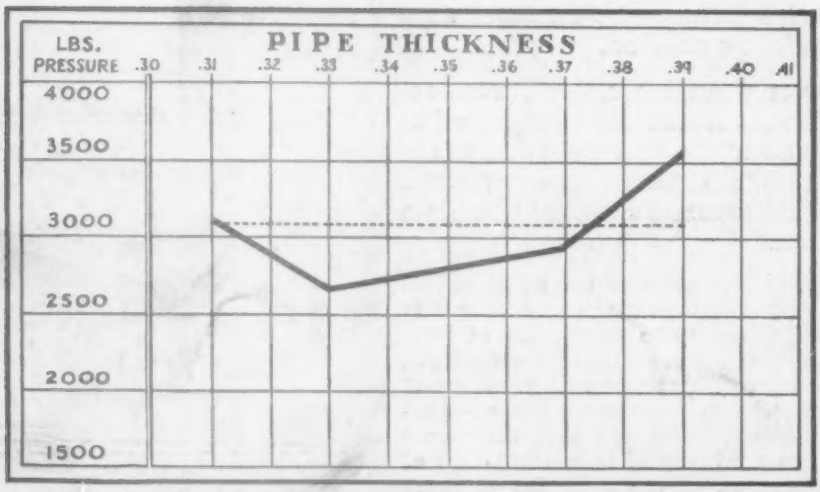
Philadelphia Cleveland Chicago Houston Tulsa San Francisco

*deLavaud pipe shows

an average internal resistance

of 3090 lbs. per square inch



* The above graph is based on tests performed by a well-known Testing Laboratory. These tests show that deLavaud Pipe is over 25% stronger than good pit cast pipe. The dotted line represents the average bursting pressure of 6" deLavaud pipe of representative thicknesses.

THE superior strength of deLavaud pipe becomes more surprising when one considers the increased carrying capacity which this pipe offers. On the graph shown above, you will note that the average thickness of the deLavaud pipe tested is thirty-five one-hundredths of an inch. Yet, this pipe exceeds by 25% the strength of any pit cast pipe designed for equal working pressures.

deLavaud pipe is made by pouring molten metal into a cylindrical mould which is revolving at a high rate of speed. Centrifugal force holds the metal against the mould and drives out impurities *with a force 40 times greater than gravity*.

Therefore, deLavaud cast iron has a dense close-grained structure and freedom from gas bubbles and impurities. In addition, the quick cooling of the surface metal in the deLavaud water-cooled mould helps bring about the finely divided condition of the graphite in the iron.

Cast iron pipe made by this Company bears the "Q-check" trademark of The Cast Iron Pipe Research Association.

So remarkable have been the results of strength tests conducted on deLavaud Pipe that it is difficult to describe them without using extravagant-sounding comparisons. Suffice it to say that the great strength of deLavaud has never been equalled by any pit cast pipe.

Let us send you further facts and figures about deLavaud Pipe. Our free, illustrated handbook gives detailed information regarding types of joints and dimension tables. Write for your copy today.

United States Pipe

and Foundry Co., Burlington, New Jersey

Sales Offices: New York, Philadelphia, Pittsburgh, Cleveland, Buffalo, Chicago, Dallas, Birmingham, Kansas City, Minneapolis, Seattle, San Francisco, Los Angeles